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VITAMIN D ADMINISTRATION IN PARATHYROID DEFICIENCY FOLLOWING THYROIDECTOMY.

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VITAMIN D, the antirachitic vitamin, has been proved to be ergosterol "irradiated" by exposure to ultra-violet radiation. Experimentally irradiated ergosterol is a million times more potent than cod liver oil in effecting a cure in rickets. In the form of "Radiostol," which is ergosterol dissolved in oil and irradiated, it is 200,000 times as active as cod liver oil, so that five grammes are the equivalent of one ton of cod liver oil.

Vitamin D seems to be necessary for the proper functioning of the parathyroid gland. It has a profound effect on calcium metabolism. Up to a certain dosage it determines the deposition of calcium in the skeleton. In excessive dosage it causes hypercalcaemia and loss of calcium from the skeleton. In normal doses it makes calcium available

to muscles and is therefore largely responsible for muscle tone. In excess it leads to flaccidity. Its deficiency leads to hypertonus and tetany. In the nervous system deficiency leads to irritability and, in cases that will be discussed in this paper, to grave depression. It must be understood that in these effects vitamin D is synergic with the function of the parathyroid glands.

Experimentally excess of vitamin D has led to rapid loss of weight, emaciation and anorexia, or in young animals failure to gain weight with a normal intake of food, decrease in vigour, and a rough and shaggy coat. Deficiency, of course, leads to rickets and tetany.⁽¹⁾

Certain anomalous features of some of our patients suffering with hyperthyroidism led us to believe that we were dealing with conditions in which the parathyroid glands were also affected and we were of the opinion that both hyperactive and hypoactive states could be recognized.

In regard to hyperactivity of the parathyroids, there is a type of hyperthyroidism in which the

patients are in a state of profound emaciation without a commensurate elevation of metabolism. The appetite may be quite good, so that there seems to be a wastage of the ingested food. These people look profoundly ill, but do not feel so. Gross alopecia is a marked feature. Such patients do not respond to iodine to any extent.

A female patient, aged seventeen years, was admitted to the Royal Prince Alfred Hospital. She had had amenorrhœa for a period of one year. Her weight had decreased from 50.4 kilograms (eight stone) to 33.3 kilograms (five stone four pounds) in two years. She had always been nervy, but was not more so at the time of admission than formerly. She had no palpitation nor shortness of breath. Her appetite was fairly good. Her bowels acted regularly and she had no diarrhœa or vomiting. There was gross alopecia, the patient being almost bald. She was an extremely wasted young girl with eunuchoidal measurements. She had prominent eye signs of hyperthyroidism, but no tremor. The thyroid was large, nodular and vascular. Bruits could be heard all over the surface of the gland. Her basal metabolic rate was +29%, her pulse rate was 130 per minute and her weight was 33.3 kilograms (five stone four pounds).

I made a note: "Most extraordinary case. No marked nervous symptoms, with wasting out of all proportion to elevation of metabolism." After some weeks of rest in bed and constant iodine administration the basal metabolic rate was +43%, the pulse rate was 118 per minute and the weight was 31.2 kilograms (four stone thirteen and a half pounds). Two months later the basal metabolic rate was +24%, the pulse rate was 108 per minute and the weight was 28.5 kilograms (four stone seven pounds). Partial right thyroidectomy was performed the next day. The pathological report on the gland removed at the operation was to the effect that the condition was one of diffuse hypertrophic goitre. After the operation the patient gradually picked up, but no further metabolic tests were done. The patient went back to Queensland.

Such patients would be analogous to the experimental animals receiving excess of vitamin D.

In the second group of patients are those who when subjected to X ray therapy to the thyroid gland rapidly gain weight, though the metabolism may have increased to a considerable extent.

Table showing gain in weight and rising metabolism of patients undergoing X ray therapy.

Case Number.	Original B.M.R.	Subsequent B.M.R.	Original Weight.	Subsequent Weight.	Gain.
I	+26%	+31%	41.8 kg. (6 st. 9 lb.)	63 kg. (10 st.)	21.1 kg. (3 st. 5 lb.)
II	+17%	+36%	51.3 kg. (8 st. 2 lb.)	55.8 kg. (8 st. 12 lb.)	4.5 kg. (10 lb.)
III	+24%	+32%	43.2 kg. (6 st. 12 lb.)	50.4 kg. (8 st.)	7.2 kg. (1 st. 2 lb.)
IV	+18%	+34%	49 kg. (7 st. 11 lb.)	57.1 kg. (9 st. 1 lb.)	8.1 kg. (1 st. 4 lb.)
V	+24%	+62%	43.2 kg. (6 st. 12 lb.)	47.7 kg. (7 st. 8 lb.)	4.5 kg. (10 lb.)

(See also Case V, R.H., below.)

One feels that the explanation of this gain of weight is that the parathyroids have been hyperactive along with the thyroid, and that X ray therapy has had a selective inhibitory action on the parathyroid. It is well known that the first dose or two of X rays often stimulates the already hyperfunctioning thyroid gland, so that the appar-

ently anomalous result of a patient rapidly gaining weight with a rising metabolism could be explained on the grounds that the hyperactive parathyroid gland plays a large part in the loss of weight in hyperthyroidism. That the X rays seem to have a very depressing effect on the parathyroid glands seems to be borne out by the following.

A female patient, aged sixteen years, had had well-marked classical symptoms of exophthalmic goitre for eighteen months. She also had a definite Fröhlich syndrome of the overgrown type. When first seen she was breathless on the slightest exertion. Her basal metabolic rate was +53%, her pulse rate was 132 per minute and her weight was 85.5 kilograms (thirteen stone eight pounds). She was given two exposures of X rays to the thyroid and was operated on soon afterwards. She died of acute tetany about twenty-four hours after operation. No parathyroid tissue could be found after a very careful search of the biopsy material, so that it seemed that the manipulation of the gland at operation was sufficient to precipitate an acute inhibition of the parathyroid already begun by the exposure to X rays.

In the third group of patients are those in whom hypofunction of the parathyroid apparatus has developed after operative or radiation treatment of the thyroid gland. The result of the administration of "Radiostol" to these patients will be considered in detail. These patients were under the care of surgeons on the staff of the Royal Prince Alfred Hospital and it was their permission and cooperation that made this study possible.

CASE I. C.C., a female patient, aged thirty-seven years, has been under observation during the past three and a half years at the Royal Prince Alfred Hospital. She had been ill for a period of eight months before coming to hospital. On May 10, 1927, her basal metabolic rate was +22%, her pulse rate was 104 per minute and her weight was 53.7 kilograms (eight stone seven and a half pounds). Her normal weight had been 69.3 kilograms (eleven stone). Her symptoms were typical of moderately severe hyperthyroidism. After operation her basal metabolic rate rose to +38%, her pulse rate was 96 per minute and her weight was 60.7 kilograms (nine stone nine pounds).

Dr. Tebbutt reported that the gland removed at operation was of the hyperplastic type and was reverting to the colloid state. Lymphocytic infiltration was not a feature.

A second operation was performed four months later. A similar report on the histology was made. Three months after the second operation the basal metabolic rate was -19%, the pulse rate was 72 per minute and the weight was 65.7 kilograms (ten stone six pounds). She was given thyroid extract, but did not report regularly. Twelve months after operation her basal metabolic rate was -9%, her pulse rate was 68 per minute and her weight was 72.9 kilograms (eleven stone, eight pounds). At this time she had a big appetite, felt cold more than heat, tired very easily, but was able to work hard. She was apt to be very sleepy and was very irritable. She was flabby, fat and pale. Her eyes were still prominent; the von Graefe sign was present. No abnormality was detected in her hands or thyroid. Twenty-four months after operation her basal metabolic rate was -12%, her pulse rate was 80 per minute and her weight was 74.2 kilograms (twelve stone eleven pounds). At this time she became very tired after any exertion. She was sensitive to both heat and cold. She was breathless on exertion. She had a very large appetite and had cravings for certain foods. She was still gaining weight. She had no tingling, but suffered from cramps. She suffered from depression and irritability. Her limbs felt dead in the morning. She felt life was not worth living. Her expression was fixed. The tissues of her arm felt very hard. No abnormality of her eyes, hands or thyroid was detected. Her skin was somewhat dry.

She was given parathyroid extract in a dose of six milligrammes (one-tenth of a grain) and thyroid extract,

0.06 gramme (one grain) daily, for one month, but there was no improvement at all. She was then given "Radiostol" in a dosage of 0.9 cubic centimetre (fifteen minims) three times daily, and the same dose of thyroid extract. At the end of two weeks on this treatment her basal metabolic rate was -12%, her pulse rate was 80 per minute and her weight was 76.0 kilograms (twelve stone one pound). She stated that she felt a different woman. Her appetite was normal and she had no craving. She awoke fresh and felt animated in every way. Her limbs were no longer dead in the morning. Her periods had improved. Her husband said she was like she was when they were married. She looked extremely well, her face was animated, the fixed expression had gone. Note that the improvement was independent of the basal metabolic rate which had remained quite constant.

She was given "Ostelin" and thyroid extract in a dose of 0.18 gramme (three grains). At the end of a further period of one month she did not feel so well, and she had had a return of cramps. She did not look so bright. "Radiostol" was administered again in a dose of 0.9 cubic centimetre (fifteen minims) a day and the same dose of thyroid extract. After one month on this treatment her basal metabolic rate was -20%, her pulse rate was 76 per minute and her weight was 76.5 kilograms (twelve stone two pounds). Her blood calcium content was 9.9 milligrammes *per centum* while she was taking this smaller dose of "Radiostol." She did not begin to feel well again till towards the end of the month, then she had no cramps and was not depressed nor irritable. She looked extremely well and her tissues were no longer hard.

She was not seen again for two months. She had taken "Radiostol" in a dose of 1.2 cubic centimetres (twenty minims) daily and thyroid extract 0.12 gramme (two grains) daily for the first month, but had not felt quite so well. Then the "Radiostol" had given out. She had continued to take thyroid extract, but had begun to get very depressed; the future had looked hopeless, she had lost all energy, and the cravings for food had returned.

At the end of a further three weeks the thyroid extract had given out. Her movements had become slow and she had noticed a big change in her voice. Constipation had become very bad, in spite of aperients. She looked dull and apathetic and the general appearance was the same as that noticed before treatment with "Radiostol" had been instituted.

She was given "Radiostol" two cubic centimetres (thirty minims) each day and thyroid extract again and after a further two months of constant treatment her basal metabolic rate was -13%, her pulse rate was 72 per minute and her weight was 75.6 kilograms (twelve stone). She now feels happy and cheerful and is improved in every way.

This patient has therefore been under treatment for eight months and experiments have been varied so as to rule out definitely any chance of coincidence in her improvement while taking "Radiostol." There is no doubt that this drug in large doses is necessary to make her a normal person.

CASE II.—A.H., a woman, aged forty-two years, has suffered from hyperthyroidism for six years and has been under observation at the Royal Prince Alfred Hospital for two and a half years. On December 5, 1927, her basal metabolic rate was +45%, her pulse rate was 116 per minute and her weight was 42.5 kilograms (six stone ten and a half pounds). Her normal weight was about 44.1 kilograms (seven stone).

Her symptoms were typical of moderately severe hyperthyroidism. She was a native of Derbyshire and had had goitre all her life. Two operations on the thyroid gland were performed at an interval of three months. Histologically the portions of gland removed at both operations were hyperplastic and exhibited evidence of reversion to the colloid state. Lymphocytic infiltration was not a feature. Subsequent to the second operation definite tetany developed which was relieved by parathyroid extract administered by mouth.

Six weeks after the second operation the basal metabolic rate was zero, the pulse rate was 92 per minute and the

weight was 46.8 kilograms (seven stone six pounds). Three months after the second operation her basal metabolic rate was -13%, her pulse rate was 80 per minute and her weight was 51.7 kilograms (eight stone three pounds). At this time she had definite symptoms of tetany, although she was taking calcium lactate and parathyroid. She was admitted to hospital in order that Collip's extract of parathyroid might be administered subcutaneously. "Paroidin" (Parke, Davis and Company's extract) was the parathyroid extract used, and the tetany was controlled, though the serum calcium content was not greatly affected. Subsequently she was given thyroid extract in a dose of 0.06 gramme (one grain) and parathyroid extract six milligrammes (one-tenth of a grain) a day, and seen from time to time as an out-patient, when she always had symptoms of tetany and cramp and the tissues of her limbs were hard.

Twenty-four months after operation her basal metabolic rate was -40%, her pulse rate was 56 per minute and her weight was 47.7 kilograms (seven stone eight pounds). These findings were confirmed.

She had anorexia and no energy. Her hands were fairly good, but there were a little tingling and cramps in them at times. She was greatly depressed, which was not like her. She was very irritable. The tissues of her arms were fairly hard.

The clinical condition was not in keeping with her basal metabolic rate. This history, along with others, definitely indicates that postoperative hypothyroidism is not necessarily associated with the symptom complex of myxedema till the hypothyroidic state has existed for a very considerable time.

The patient was now given "Radiostol" in a dose of 0.9 cubic centimetre (fifteen minims) three times a day for one month without thyroid extract. At the end of a month she had no cramps or tingling and was not so depressed. She was still irritable. She had had a lot of worry, as her husband was out of work.

She was then given "Radiostol" in a dose of 0.6 cubic centimetre (ten minims) twice a day for one month, at the end of which time she was examined, when it was found that her basal metabolic rate was -38%, her pulse rate was 62 per minute and her weight was 49.9 kilograms (seven stone thirteen pounds). She had had no cramps for one month and was much more cheerful. She was no longer irritable. She felt the cold very much. She looked happy and much improved.

She was given "Radiostol" in a dose of 0.6 cubic centimetre (ten minims) twice a day and Oppenheimer's thyroid extract 0.13 gramme (three grains) a day for nineteen days. At the end of this time her basal metabolic rate was -25%, her pulse rate was 70 per minute and her weight was 49.5 kilograms (seven stone twelve pounds). Her blood calcium content was 7.5 milligrammes *per centum*. Her appetite had improved. She suffered from slight cramp following a day's washing. This was the first time she had been able to do any washing for years. She was not at all depressed or irritable. Her periods were quite regular, but were too free for the first month while she was taking "Radiostol." She was better than she had felt for years. She looked better than I had seen her and her tissues were much more normal to feel.

At the end of a further six weeks of "Radiostol" administration in a dose of 0.6 cubic centimetre (ten minims) twice a day and thyroid extract 0.18 gramme (three grains), her basal metabolic rate was -27%, her pulse rate was 68 per minute and her weight was 50.4 kilograms (eight stone). Her blood calcium content was 7.8 milligrammes *per centum*. Her improvement had been well maintained and her symptoms now were those of hypothyroidism only.

Ten weeks later, while she was taking the same dose of "Radiostol" but increasing doses of thyroid, her basal metabolic rate was -10%, her pulse rate was 68 per minute and her weight was 49.0 kilograms (seven stone eleven pounds). She was now feeling extremely well and was not feeling the cold. At the end of a further three months she is perfectly well and happy.

The history of this patient clearly demonstrates that the improvement while she was taking "Radi-

ostol" was quite independent of the metabolic rate, as her symptoms of depression, irritability and tetany disappeared, though there was no change in the metabolism, the basal metabolic rate being -40% before the administration of "Radiostol" and -38% at the end of one month of "Radiostol" administration. Nor was the clinical improvement accompanied by any definite change in the level of calcium of the serum, though the intake of calcium in the form of milk was quite appreciable. The calcium seemed to be made available to the tissues by the increased amount of vitamin D present.

CASE III. V.W., a female patient, aged thirty-nine years, has been under observation in the Royal Prince Alfred Hospital for three years. She had a tumour in her neck of ten years' duration. She had no symptoms referable to goitre, but the swelling was found in course of routine examination. She was referred for metabolism estimation. Her basal metabolic rate was -28%, her pulse rate was 88 per minute and her weight was 67.5 kilograms (ten stone ten pounds). She was given thyroid extract.

At the end of eight months her basal metabolic rate was +10%, her pulse rate was 94 per minute and her weight was 65.7 kilograms (ten stone six pounds). One year later, though she was not taking thyroid extract, her basal metabolic rate was +14%, her pulse rate was 76 per minute and her weight was 72.4 kilograms (eleven stone seven pounds). The thyroid therapy had apparently stimulated the gland. Operation was decided upon.

The histology of the gland removed at operation was typical of lymphadenoid goitre (Riedel's struma).

Three months after operation her basal metabolic rate was -27%, her pulse rate was 76 per minute and her weight was 84.6 kilograms (thirteen stone six pounds), a gain of 12.6 kilograms (two stone) since the operation.

She did not feel well, tired very easily, had no energy, and suffered from shortness of breath. She felt the heat and perspired freely. She was very constipated, had cravings for food, and was unaccountably depressed. She had cramp-like pains in her legs. She did not look well, but pale and tired. The tissues of her arms were very hard.

In order to see if her symptoms would be improved by raising the metabolism she was given thyroid extract in a dose of 0.18 gramme (three grains) a day. At the end of one month her basal metabolic rate was -12%, her pulse rate was 80 per minute and her weight was 85.5 kilograms (thirteen stone eight pounds). She was not so depressed, otherwise her condition remained unchanged. She was still gaining weight, still irritable and still had cravings for food. She said she did not feel improved.

She was then given "Radiostol" in a dose of 0.3 cubic centimetre (five minims) three times a day. At the end of one month her basal metabolic rate was -18%, her pulse rate was 80 per minute and her weight was 88.2 kilograms (fourteen stone). The cravings for food had gone. Her appetite was still large. She was not so depressed, but still had a lack of energy and was easily tired. She was still constipated. The pains in her legs had gone.

The brand of thyroid extract was changed, but the dose was kept the same. "Radiostol" was continued as above. One month later her basal metabolic rate was -5%, her pulse rate was 96 per minute and her weight was 85.9 kilograms (thirteen stone nine pounds). She felt better in every way, her appetite was less, she had no craving for food, she had more energy and was not depressed or irritable. She suffered from pains in arms and legs on exertion. She looked much improved, her colour was better, her tissues were no longer hard. At the end of a further month on the same treatment her basal metabolic rate was +10%, her pulse rate was 92 per minute and her weight was 85.0 kilograms (thirteen stone seven pounds). She felt excellent and had no pains in her limbs, even on exertion. She was not depressed and had no cravings. She was losing weight, felt much stronger, and was better than she had been for over three years. She certainly looked a different woman.

In this case the dose of "Radiostol" was much less than in the previous two cases and the improvement was much slower.

CASE IV. A.S., a female patient, aged forty-one years, has been under observation for a period of five years, during the past four years more or less continuously. Goitre was first noticed about 1924, at which time it was the size of an egg. Her symptoms then were "choking attacks" and unconsciousness on excitement or worry. The goitre grew steadily and in 1925 an exploratory operation was made, but the surgeon considered the gland to be the seat of malignant disease and inoperable. X ray therapy in limit dosage was subsequently applied and the patient was later shown at a clinical meeting, as the disease had not progressed. The question of lymphadenoid goitre was raised, and the patient was readmitted to hospital for further investigation. This was in December, 1926. At that time her basal metabolic rate was -15%, her pulse rate was 60 per minute and her weight was 82.3 kilograms (thirteen stone one pound). She had had a return of attacks of breathlessness during the previous six months. She was sensitive to both extremes of temperature, her hair was dry, she was very depressed and melancholic. Her menstrual periods were regular, but the flow was excessive; her thyroid enlarged during menstruation. She was gaining weight. She was myxœdematous in appearance, her expression was dull, her complexion was sallow, the skin of her forehead was parchment-like, as also was the skin of her hands and arms. The skin was not dry and rough, but somewhat myxœdematous. The hair of her head was dark, her eyebrows were scanty. An old transverse incision was present over the neck. The right lobe of the thyroid was enlarged and firm, but the thyroid was difficult to examine owing to fat deposition.

On December 16, 1926, a small portion of the thyroid was removed for pathological examination. Histologically the condition was one of lymphadenoma, Riedel's struma.

The patient was reexamined on February 1, 1929, at which time she had been taking thyroid extract in a dose of 0.36 gramme (six grains) a day for six months. Her basal metabolic rate was -3%, her pulse rate was 80 per minute and her weight was 91.3 kilograms (fourteen stone seven pounds). She was gaining weight. She had pains in her legs and head. Her skin was smooth and dry.

Fifteen months later, while still taking thyroid extract in a dose of 0.3 gramme a day, her basal metabolic rate was -3%, her pulse rate was 82 per minute and her weight was 93.6 kilograms (fourteen stone twelve pounds). She was still gaining weight. She was a very big eater and had cravings for food. She had cramps in her toes and "pins and needles" sensations. She became exhausted on slight exertion. She was apt to be terribly depressed and had attempted to commit suicide. She was very irritable. She felt the cold very much, but also the heat. She required aperients for the bowels. She was somewhat myxœdematous in appearance. Her skin was dry. She had practically no eyebrows. Her hair was not dry. The skin of her face was not very dry.

She was given the same dose of thyroid, that is, 0.3 gramme (five grains) daily, and "Radiostol" 2.7 cubic centimetres (forty-five minims) daily. At the end of one month her basal metabolic rate was +2%, her pulse rate was 80 per minute and her weight was 90.4 kilograms (fourteen stone five pounds). She felt a different woman. Her husband said she was a different woman. She was not depressed, but quite cheerful; she was not so irritable and was sleeping better; she was able to do a lot more work without exhaustion. Cramps were still present, but did not occur so frequently. She still suffered from a feeling of "pins and needles." She was still a big eater and had cravings for food, but had lost weight.

The dose of "Radiostol" was increased to 3.6 cubic centimetres (sixty minims) daily. At the end of a further month her basal metabolic rate was -3%, her pulse rate was 70 per minute and her weight was 89.7 kilograms (fourteen stone three and a half pounds).

The improvement had been well maintained. She had much more energy. The cramps and the feeling of "pins and needles" had gone. She said she was 75% better than before taking "Radiostol."

The typical symptoms of depression, irritability, gain in weight, cravings for food, cramps and tinglings did not appear till after massive dosage of X rays to the thyroid region and it is assumed that the parathyroid activity was greatly depressed thereby. The improvement in this patient, as in the others, was quite dramatic.

CASE V. R.H., a female patient, aged twenty-five years, has been under observation for two years. She had had definite symptoms and signs of hyperthyroidism for three years before coming under observation. Hemi-thyroidectomy had been performed fourteen months before she came to the Royal Prince Alfred Hospital. When first seen she had definite signs and symptoms of exophthalmic goitre. Her basal metabolic rate was +16%, her pulse rate was 108 per minute and her weight was 59.8 kilograms (nine stone seven pounds).

Therapeutic X rays were administered to the thyroid every three weeks for eight months, first while she was an in-patient and then an out-patient. At the end of this time her basal metabolic rate was +52%, her pulse rate was 120 per minute and her weight was 71.1 kilograms (eleven stone four pounds). She was then readmitted and operated on again.

Two months after operation her basal metabolic rate was -7%, her pulse rate was 92 per minute and her weight was 81.9 kilograms (thirteen stone). Six months later the figures were respectively -16%, 80 and 70.2 kilograms (eleven stone two pounds). At this time she felt very well and had ceased to gain weight. Her appetite had been excessive and was now normal. She had no signs or symptoms of hyperthyroidism. Two months later her basal metabolic rate was +2%, her pulse rate was 84 per minute and her weight was 70.6 kilograms (eleven stone three pounds).

It was now midwinter. The patient complained of being very irritable and "cranky" and that "small things upset her." She was easily fatigued and had a lot of cramps in her legs and tingling in her hands. She was very depressed. Her complexion was very pale and had a puffy appearance.

She was given "Radiostol" in a dose of 0.9 cubic centimetre (fifteen minims) three times a day for a fortnight. At the end of that time she was much better, was not cranky or irritable, and her cramps were much less severe. She still had lack of energy.

This patient had very bad teeth which were recently extracted, so that she must be considered to be still under observation.

CASE VI. E.B., a female patient, aged forty-seven years, had had hyperthyroidism for four years before coming to the Royal Prince Alfred Hospital. She has been under observation in the Royal Prince Alfred Hospital for three years. On admission she had classical signs and symptoms of Graves's disease.

On November 11, 1927, her basal metabolic rate was +55%, her pulse rate was 132 per minute and her weight was 51.7 kilograms (eight stone three pounds).

Two operations were performed with an interval of eight months between operations. She has been seen at intervals until two months ago. Her metabolism has ranged from +10% to +20% ever since the second operation. When seen two months ago her basal metabolic rate was +17%, her pulse rate was 100 per minute and her weight was 55.8 kilograms (eight stone twelve pounds). She then complained of palpitation and shortness of breath. She was nervy and had a subjective feeling of heat. There was swelling of the hands and feet. She was very depressed, lachrymose and irritable. She had cramp in her fingers and a feeling of heaviness of the limbs. She was pale, and apathetic. There was a somewhat puffy appearance of the face. The tissues of her arm were very hard.

At the end of a month, during which she was taking "Radiostol" two cubic centimetres (thirty minims) each day, her basal metabolic rate was +11%, her pulse rate was 84 per minute and her weight was 56.0 kilograms (eight stone twelve and a half pounds). She said she

felt a different woman. She was not depressed, but very cheerful; the cramp had practically gone; everything looked bright. She appeared to be a perfectly happy woman, she smiled readily, her colour was very good. The tissues of her arms were not nearly so firm.

Discussion.

Since the introduction of a concentrated form of vitamin D the attention of most workers has been directed towards the effect of this substance on ossification in children and in experimental animals. Only a few cases of the effect of vitamin D on tetany in adults are recorded. Amongst the earliest reports are those of John C. Brougher⁽²⁾ who gives a summary of the findings of previous workers. Brougher, giving comparatively small doses, 0.24 to 1.20 cubic centimetres (four to twenty drops), of "Viosterol,"¹ was able in four instances to alleviate symptoms of tetany following thyroidectomy or in one instance following extensive intestinal resection.

In none of these reports is any mention made of the mental depression, irritability, cravings for food, excessive gain in weight, pallor or liability to fatigue as seen in the patients whose histories are recorded in this paper. It is the relief from this symptom complex which has been so much appreciated by these patients.

Comparatively few estimations of the serum calcium content have been done, but there is no evidence that in the dosage used the administration of "Radiostol" raised the quantity of serum calcium to any appreciable extent.

It is a striking fact that the typical syndrome from which these patients suffered, appeared, with one exception (Case III), in those who had been subjected either to multiple thyroidectomy or prolonged X ray therapy and subsequent operation on the thyroid gland.

Summary.

1. Subsequent to thyroidectomy or to excessive radiotherapy to the thyroid gland the following symptoms may develop as a manifestation of parathyroid imbalance: Tetany, cramps, numbness, tingling sensation, a feeling of "pins and needles," grave depression, pronounced irritability, cravings for food, excessive appetite, marked gain in weight, pallor, undue fatigue.

2. Control experiments definitely rule out the possibility of these symptoms being due to hypothyroidism.

3. All these symptoms disappear on the administration of relatively large doses of irradiated ergosterol.

4. Six cases are recorded which illustrate the remarkable response to vitamin D given as "Radiostol."

Acknowledgements.

I am greatly indebted to Dr. H. Poate, Dr. St. J. Dansey, Dr. B. Edye and Dr. R. Davies for permis-

¹ "Viosterol" is the authorized American word for irradiated ergosterol dissolved in oil.

sion to try the effect of "Radiostol" on their patients. The histology of the biopsy material was carried out by Dr. A. H. Tebbutt.

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RADIUM THERAPY IN CANCER OF THE NOSE, LARYNX AND OESOPHAGUS.

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THERE is but a restricted field for the use of radium in neoplasms of the nasal region and the naso-pharynx. So numerous are the histological varieties found here that Ewing, according to Douglas Quick, has recently described thirty-seven different types of growth. Any of these may cause blocking of the nasal passages. Since this obstruction is most frequently the warning symptom which brings the patient to his physician, it follows that most of the sufferers come for treatment in the later stages of the disease. By that time it is often impossible either to define the exact site of origin of the tumour or to gauge with accuracy the degree of bone or cartilage involvement. Interference with sinus drainage brings infection in its train, and here as elsewhere the associated inflammatory condition is the bugbear of the radiotherapist. Not only does it mask the neoplasm and confuse the picture, but it increases the gravity of any intervention. With bone invasion osteomyelitis occurs, with cartilage invasion, necrosis; and the sinister conspiracy of neoplasm, infection, and necrosis compasses the patient's destruction.

Cancer of the Maxilla.

In the upper jaw by the association of surgery and radium therapy a success may be achieved which cannot be obtained from the use of either method alone. Much has been expected in other regions of the body from radium therapy following surgical exposure, but a reaction has already set in because of the disappointing results. It is essential in the superior maxilla that the surgical act should be exploited to its utmost, and that the subsequent technique of radiation should be just as thorough and complete as if no preliminary surgical treatment had been given. In the radium therapy of cancer, as in the surgery of malignant disease, there is no place for half-hearted methods or tinkering.

The predominating type of growth is the cylindrical celled carcinoma. It is often difficult to say whether its origin is in the nasal or paranasal area. A squamous celled cancer may be met with in the antrum, usually after invasion from without, but occasionally it may develop by metaplasia from

the cylindrical celled tumour. Most of the so-called sarcomata are in reality cylindrical celled cancers. The true sarcoma, however, is found as a myxosarcoma or angiosarcoma; happily the osteogenic kind is rare. Mixed spindle celled and round celled sarcomata are seen growing from the turbinates and the chondromyxosarcoma occurs in the vault of children. The lymphosarcoma may appear in almost any part of the nasal or paranasal regions, and from these a dramatic if ephemeral success may be won with even mild doses of radiation. A knowledge of the histological structure is an essential basis for any decision as to treatment, for though the lymphosarcoma is finely sensitive to radiation, it is far otherwise with the adult type of epithelial tumours. It has been estimated that for the effective treatment of these growths a dose equal to from seven to ten erythema doses is necessary. And since no matter how we manoeuvre to multiply our ports in order to obtain crossfiring we cannot deliver from external sources much more than the equivalent of twice an erythema dose, it follows that the only successful method of radiation treatment depends on the combination of external treatment with the utilization of foyers within the tissues themselves.

The second task is that of rendering the neoplasm accessible; this is the surgeon's part. There is a call here for sympathetic and intelligent team work. The manner of approach is one for the surgeon's decision and he will consider each case on its merits. It is best to begin with the deep X radiation, and there is this advantage, that this part of the treatment can be begun while the patient is awaiting admission. It has been my experience of the larger hospitals that in the period intervening between diagnosis of the disease and the patient's admission to hospital we too often miss the tide which might have borne us to greater accomplishment. But here there is no excuse. The diagnosis should be followed at once by irradiation in the out-patient department; we have then a fortnight in which to arrange for the patient's admission. At the end of that time the operation should take place. The neoplasm is exposed and if possible removed. Even its incomplete extirpation has a value. It is necessary for surgeons to realize that preliminary irradiation has an asset value in that it prevents the scattering of cancer cells which an incomplete operation might cause. Ledoux states that incomplete removal of the neoplasm in this region does not cause any acceleration of its malignant action. The operation of partial removal, however, is usually associated with free and even dangerous bleeding, and this may demand the use of packs and make it necessary to postpone for several days the third stage, that of radium implantation.

We have two radium techniques from which to choose. The first is that in which we use the emanation. This is a comparatively easy method and we are left free from the anxiety of having to recover our "seeds." Theoretically the dose delivered can be made to equal that given by radium element, but it is a fading dose. Radium emanation begins its attack with a tremendous zest, but peters out rapidly. Nor is this the chief disadvantage of emanation here. There is always a difficulty when

we use emanation of obtaining sufficient filtration without rendering the "seeds" too bulky and too clumsy, and heavy filtration is in this position an essential for successful results. On the whole it is preferable to introduce tubes of the element with a primary filtration equivalent to two millimetres of platinum and a secondary filter of aluminium and rubber. If the area to be treated is small, we may distribute three tubes of ten milligrammes evenly over the area, and leave them for seven to eight days giving an average dose of from thirty to forty millicuries destroyed. When the disease is limited to the superior maxilla and ethmoid, Hautant and Monod resect the maxilla and into the cavity left pack ten to twelve tubes, containing three milligrammes each, which they leave for four days. The total dose given is from twenty-five to thirty millicuries destroyed.

The three stages of treatment should be completed within a month. We have then to consider the ever-recurring question of the lymphatic glands. The histological type of tumour is a factor which we must take into account in deciding the particular treatment. Even if no active measures are taken, our inactivity should be a watchful inactivity. The areas suspected should be kept under close surveillance, and the patient made to report regularly in a manner similar to that with which Regaud watches over the patients with epithelioma of the lip treated by radium alone. Ledoux believes it to be of capital importance to irradiate the first relay of lymphatics between the bones of the face on one side and the base of the skull and the spine on the other.

Cancer of the Naso-Pharynx.

The fibrosarcoma of the naso-pharynx is more sensitive the younger the patient. In the more resistant adult types surgical operation is indicated. The sarcomata which grow from bone and cartilage belong entirely to the surgeon's province, but pre-operative irradiation may have a value.

The lymphosarcoma is susceptible of cure by external irradiation alone, and for this deep X radiation is the most convenient. Action has to be prompt, however, because early metastasization may rob us of complete cure. Ledoux employs five ports of entry for a lymphosarcoma in the vault of the pharynx: one on each side for the lymphatic area of the neck, one on each side directed against the primary growth, and a fifth through the palate with the mouth open. With the lymphosarcoma we get occasionally a cheering echo from our treatment of the primary lesion in the spontaneous disappearance of the distant metastases. It is, I believe, the only type of growth in which such a phenomenon has been observed. If, with a deeper knowledge of the biological effects of irradiation, we could utilize and extend this extraordinary effect, we should see new horizons open up for us bright with the prospect of greater efficiency in cancer treatment.

Laryngeal Cancer.

In laryngeal cancer there is again a great need for that careful selection of the suitable types which is necessary for effective treatment. Only a very small

dominion falls under the hegemony of radiation treatment, and even to a large part of this surgery can make a valid claim.

The cancers here are somewhat crudely divided into the extrinsic and intrinsic, following the old classification suggested by Isambert. The extrinsic is really a laryngo-pharyngeal cancer and includes growths having origin from pharyngeal side of the arytenoids, from the aryepiglottic fold and the *sinus pyriformis*. A varying degree of infection is ever present and the neighbouring lymphatic glands soon become invaded by growth. The tumour itself is inaccessible and radio-resistant; there is little that surgical operation or radiotherapy can offer. A fleeting palliation may follow the use of radium on wax at a distance of several centimetres, or from deep X rays. Only from some rare and delicately sensitive growth can a victory be gained. A technique with radon seeds might seem to offer a way out to success, but the practical radium therapist appreciates the difficulty of evenly and efficiently irradiating the whole area of the tumour, especially its lower pole. The expensive method of utilizing large quantities of radium in the form of a radium pack or bomb has as yet produced no modification of the depressing results.

But the intrinsic cancer is a more hopeful problem. It is essentially a cancer of the vocal chord, becomes subglottic by extension, but it is not by nature highly invasive. Thus it is not very vascular and remains for long unilateral; the barrier of cartilage for a comparatively long time rests uncrossed, and gland involvement is late. Further this cancer may be diagnosed relatively early because an alteration of the voice-quality proclaims the existence of a defect and invites public comment.

Now this intrinsic carcinoma of the larynx yields excellent results with surgical methods, and operators like St. Clair Thomson, MacKenty, Gluck and Serenson have published many fine records after employing the operation of laryngofissure or its modifications. It is also one of the few types of laryngeal cancer in which there is some justification for the employment of a radium technique. The one advantage of such a technique is to be found in the superior functional result obtained. But the method has its limitations, its contraindications and its possible complications.

The technique to be recommended is that of Finzi and Harman which was founded on Ledoux's work in Brussels. The necessary conditions for success are that the growth be limited to the vocal chord, that the anterior commissure be not involved and that neither muscle nor cartilage be invaded. When the cancer has spread beyond the middle line to the other side, the percentage of successful results is low. Thus the radium therapist demands the very type from which the expert laryngological surgeon reaps his best harvest. In return he offers a better voice. The important question yet to be answered is whether with radium the percentages of ultimate cures justifies the refusal of excision. In the case of cancer not the quality of the voice, but the percentage chance of success must count most.

A skin incision commencing at the hyoid bone is made along the posterior border of the thyroid cartilage. The subthyroid muscles are retracted and the lateral face of the cartilage exposed. The perichondrium is incised and retracted anteriorly and posteriorly. A great part of the lateral cartilage is now resected, a window framed by its remaining edges being left. It is a capital point that the perichondrium on the inner side should be left intact. A curtain thus remains which shields the larynx from secondary inflammation. Removal of the cartilage also lessens the risk of necrosis. Five to ten needles of one-half or one milligramme of radium element are placed vertically in this casement, their tips tucked under the framework. They are of one and two centimetres length, their filter is 0.5 millimetre of platinum. They must not perforate the larynx. If the tumour has become subglottic, needles may be buried inside the cricoid ring, but this is no easy matter and in such a case the prospects of successful treatment are poor.

A thread is attached to each needle and is steeped in acriflavine one in a thousand solution. These threads are tied together and hidden under the muscles. Sutures are then placed in the skin without drainage and collodion applied. Usually seven long and one short needles are used. If the growth has extended beyond the middle line, twelve needles in all are employed and then a low tracheotomy is necessary. The needles are left in from four and a half to eight days. There is often during this period a slight rise of temperature with some coughing and the hawking up of a sticky mucus. Within ten days the tumour is reduced to a mere nodule. A white grey film then covers the area with a halo of redness in the surrounding tissues. In six weeks the tumour has as a rule entirely disappeared.

A criticism to be made of such a technique is that its success depends on the growth being of extremely limited extent, that from a physical point of view the most anteriorly placed needle is nearer the growth than the most posteriorly placed, and so the irradiation is not equal over the whole tumour, and lastly that the results hitherto published are based on too small a series of cases. But it is the only needle technique justifiable in the larynx. Let those who seek to improvise techniques, study in the literature the records of failure and worse which must be debited against the embedding of radium needles within the larynx.

In the radiation treatment of the larynx certain complications may follow. Œdema of the glottis, asphyxia and necrosis of the laryngeal cartilages are those chiefly to be feared. It may become necessary in an emergency to perform a low tracheotomy. Necrosis of the cartilages which has always been cited as an ever-present menace, particularly after deep X radiation, is probably an exaggerated danger. It is most likely to occur after irradiation in advanced cases in which the cartilage has become invaded with growth and where treatment should probably have never been undertaken. In such late stages even a grave cellulitis of the neck may develop.

When with the cord fixed the growth has extended subglottically, there is yet a minor part to be played

by radium at a distance. In the procedure which Hautant advocates a surface application at a distance is given with the same thoroughness as if this were the sole means available. Then six to eight weeks later he performs a hemilaryngectomy which is done in as complete a manner as if no preliminary irradiation had been given. He finds that the pre-operation irradiation begets no operative difficulty and he thinks it improves his results. This alone of all radiation techniques has he salvaged from the wreck in many unfortunate experiences.

There is a third type of laryngeal neoplasm which is suitable for deep X radiation, and that is the rarer cancer which grows from the ventricular cavity or ventricular band. It is often vegetating, sometimes ulcerating, always rapidly invasive of cartilage and glands. Histologically it resembles rather the mucous membrane type of epithelioma and is radio-sensitive. To Coutard belongs the credit of having discovered a variety suitable for deep X radiation and of having in some slight way restored the damaged prestige of X rays as a therapeutic procedure in laryngeal conditions. The patient for preference should have a preliminary tracheotomy, and in elderly people it is wise to remember that with ossified cartilages there is a very real danger of necrosis because of the secondary rays set up.

It is evident from all this how very restricted is the usefulness of both radium and deep X radiation in laryngeal cancer, and how dependent we are for success on careful selection. It is not creditable to the profession of medicine for newcomers in the field to go on repeating the errors which others have made when garnered wisdom is to be found stored in the literature. The experience of our predecessors can save us who follow from many pitfalls and great disillusionment.

Cancer of the Œsophagus.

The œsophageal cancer has been a disappointment to those who on *a priori* grounds had a right to expect some achievements by the radiation treatment of a histological type which elsewhere is more amenable. The surgeon had all but abandoned this neoplasm, and it appeared to offer a chance for the radio-therapist to win a new renown. Our successes, however, have been slight and temporary; I doubt if ever an œsophageal cancer is cured by our present methods.

The reasons for failure are, first, the inaccessibility of the neoplasm which makes it difficult or impossible to achieve our aim of a uniform and efficient dose delivered over the whole field. Secondly, the growth is rarely at an early stage when detected, since the warning signal is most often given by dysphagia and dysphagia is a late symptom. Thirdly, there is the mode of spread. If one looks at the specimens of œsophageal growths in our museum at the Medical School, one is struck by the large extra-œsophageal mass which at times surrounds a comparatively small lesion within the œsophagus. It is explained by the disposition of the lymphatic trunks which run in a longitudinal direction and form a surrounding network.

The œsophageal cancer is an infected tumour almost from the moment of inception, so that the neighbouring lymphatics become the seat first of inflammatory and later on of cancerous foci. In some cases the enlarged posterior mediastinal glands fuse together and exert such pressure as to cause a deviation of the œsophagus which can be seen radiographically.

It follows then that any technique which depends merely on the placing of tubes of radium within the malignant stricture is sadly futile. In one site only in the human body have tubes of radium placed in the cavity of an organ yielded satisfactory results; that organ is the uterus. The first step in the treatment of a malignant œsophagus should be a gastrostomy. This should follow hot-foot on diagnosis. It is a minor operation and one not unattended by risks in the old and the cachectic, but it places the part at rest, allows for the cleaning up of a fœtid malignant ulcer and provides the patient with the means of obtaining sufficient nourishment.

Since sepsis for some reason lowers the response of a neoplasm to radiation, the next step is to reduce as far as possible the secondary infection and Guizez uses irrigations of 2% bicarbonate of soda for this purpose. We then seek to outline accurately the upper and lower poles of the neoplasm. The upper limit can easily be established by œsophagoscopy or by radiography and with an indelible pencil marks on the skin should be made indicating its level both behind and in front. The lower pole, however, presents the difficulty. The best method of defining this is by use of a device suggested by Ledoux. An opaque meal is given through the gastrostomy opening after which the patient is placed in the high Trendelenburg position and asked to make swallowing movements in order to induce the cardiac orifice to open. A radiograph is then taken which gives the lower limit of the tumour and permits us to record it on the skin anteriorly and posteriorly. A perimeter will give the circumference of the thorax between these two limits. With these data the radiotherapist can estimate his depth dose and prepare his plan of campaign.

The only two methods to be considered are those of Guizez and de Nabias. Guizez selects his patients very carefully. He rejects the cachectic and those through whose stricture it is impossible to pass a sound. After making a precise diagram of the lesion he introduces a sound containing, according to the length of growth, two, three or four Dominici's tubes. Generally twenty milligrammes of radium in all are used. The treatment is given over four *séances* of twenty to twenty-four hours, with a day of rest in between.

In de Nabias's technique an attack is made from three different bases, posterior, anterior and intra-œsophageal. Posteriorly on each side of the vertebral column, on Colombia paste at a distance of three centimetres he disposes as many tubes of ten milligrammes of radium element as are necessary to extend a vertebra above and below the lesion. These tubes have a filter of two millimetres of platinum

and are three centimetres from each other at their ends. The anterior foyer is similarly arranged on wax at a distance of three centimetres from the skin. This foyer is designed to irradiate the area which is missed by the posterior beams owing to the presence of the vertebrae. An intra-œsophageal sound of black non-metallic rubber two millimetres thick is introduced and contains a sufficient number of tubes of ten milligrammes of radium, one centimetre apart, to give an irradiation well beyond the upper and lower poles. The lowest tube is never placed at the tip of the catheter. For each of the posterior ports 18,000 milligramme-hours are given, or 36,000 in all. For the anterior port 30,000 milligramme-hours, and for the intra-œsophageal sound 12,000 milligramme-hours. In all 585 millicuries are thus destroyed. The treatment is not without danger from aggravation of the infection, perforation of the œsophagus, hæmorrhage or radio necrosis. It is even said that sclerosis of the lung may be a complication. The sound may fail to find the channel through the stricture or be dislodged from it during the treatment. When the cancer is low down irradiation of the adrenals and the liver may cause toxic symptoms. A cough may follow from pulmonary irritation. There are few records of permanent cures, but the combination of intra-œsophageal radium therapy and external deep radiotherapy can prolong life by periods varying from six to eighteen months and makes the sufferer more comfortable. A striking relief of the pain is the rule, but the unpleasant salivation is usually not relieved.

THE ACTION OF X AND GAMMA RADIATION UPON AQUEOUS SOLUTIONS OF IODINE AND POTASSIUM IODIDE.¹

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LIVING cells are destroyed when subjected to the action of sufficient dosages of X or γ radiation. There is a considerable variation in the sensitivity of different kinds of cells, some being attacked much more readily than others. Speaking generally, it has been found that cancerous cells share with immature and rapidly growing cells the distinction of being particularly sensitive to these radiations. In fact, it is just this difference in the sensitivity of the cancerous cells and the cells of the normal tissue surrounding them that makes radiotherapy possible. The greater the margin between the effect of the rays upon the cancerous cells and upon the cells of the normal surrounding tissue, the better chance is there for the successful application of the rays. Great efforts are being made to determine, if possible, the cause of this difference in radio-sensitivity and one method of approaching the problem lies in the collection of information regarding the action of these rays upon known chemical compounds. This information is not easy to obtain because the amount of energy which can be absorbed from moderate

¹ This work was carried out under the control of the Cancer Research Committee of the University of Sydney and with the aid of the Cancer Research and Treatment Fund.

doses of radiation is small, and any chemical effects obtained are in general also small, but in spite of these difficulties progress is gradually being made.

Until quite recently, the known chemical effects were confined to quite a few compounds, which were constantly quoted in the literature as examples of the action of radiation. One of the effects to which reference was frequently made was the decolorizing action of X rays upon an aqueous solution of iodine. This statement rested upon the observations of Bordier⁽¹⁾ who carried out an investigation on the action of X rays on iodine and starch iodine in aqueous solution following a study of the effects of light upon these solutions.

In his experiments with X rays, Bordier worked with dilute solutions prepared by adding four drops of 10% tincture of iodine to one litre of water, giving a solution containing 0.0072 gramme of iodine per litre. In preparing the starch iodine, the same quantity of tincture of iodine was added to one litre of water to which excess of starch had been added. The solutions were placed in a paraffined cardboard box provided with a cover hermetically sealed with paraffin, the cover thus acting as a filter for the rays. He worked with different intensities of radiation and found that the iodine disappeared from the solution in a few minutes and that the blue colour of the starch iodine solution was also rapidly destroyed.

In our laboratory, experiments were first carried out with γ rays in order to determine whether these had the same effect as noted by Bordier for X rays. Radium needles with 0.5 millimetre wall thickness of platinum were used as a convenient source of the γ rays. The solutions to be tested were placed in small test tubes made by closing pieces of glass tubing at one end, the tubing being of such a diameter that the needles were completely immersed in one cubic centimetre of liquid. Under these circumstances only a small proportion of the total γ radiation is absorbed by the solution, but in accordance with the inverse square law the intensity of radiation is greatest nearest the needle and any effects produced by the radiation are much more pronounced. Increasing the diameter of the tube and the volume of the solution would give a greater total absorption, but the absorption per cubic centimetre would be less. The open ends of the test tubes were closed with stoppers. The solutions used for the most part contained 0.126 gramme of iodine per litre. Those used by Bordier were considerably more dilute. Iodine and water slowly react with formation of hydriodic acid and oxygen, consequently blank determinations were always carried out with equal volumes of solution in which needles were absent. After a week the solutions were titrated with one five-hundredth normal sodium thiosulphate, a burette being used to which a glass tube drawn out to a fine point was attached; this gave small drops and a sharper end point. The first experiments seemed to indicate that more iodine had disappeared in the tubes with needles than in the blanks, but there was the possibility that some of the iodine had been taken up by the platinum walls of the needles. At the time no empty platinum needles

were available to determine this point and the needles were coated with high-grade paraffin to prevent the solutions coming into contact with the platinum walls. The loss of iodine was diminished, but the solutions in which the needles were placed, still showed a slightly greater loss of iodine than the blanks. However, it was shown that shreds of paraffin did absorb small quantities of iodine slowly from the solution, pointing to this as the cause of the small remaining difference. Later on, empty needles were available and when these and the charged needles were coated with paraffin, it was shown that the amount of iodine remaining in the solutions was the same in both cases. One of the results obtained is appended, the tests being performed in duplicate.

Iodine solution used at the beginning of the experiment required for one cubic centimetre = 0.50 cubic centimetre N/500 thiosulphate = 0.126 grammes iodine per litre.

After five days the results were as follows:

		Mean.
Blanks (without needles) ..	$\begin{Bmatrix} 0.24 \\ 0.28 \end{Bmatrix}$	0.26
Empty needles	$\begin{Bmatrix} 0.20 \\ 0.16 \end{Bmatrix}$	0.18
Six milligramme needles ..	$\begin{Bmatrix} 0.20 \\ 0.18 \end{Bmatrix}$	0.19

The experiments show that the main loss of iodine during the five days was due to the reaction between it and water and the smaller additional loss to absorption of iodine by the paraffin coating of the empty and charged needles. In one hundred and twenty hours there was no evidence of disappearance of iodine as a result of decomposition by the γ rays.

In view of the negative result with γ rays Bordier's work on the action of light and X rays was repeated, solutions of the same strength as those employed by him being used. His observation regarding the effect of light was readily confirmed by exposing test tubes containing aqueous iodine and starch iodine to bright sunlight. In the case of aqueous iodine, only one-quarter of the original iodine was left at the end of half an hour, the starch iodine was much more stable. In the X ray experiments three cubic centimetres of solution were placed in each of four small tubes and starch was added to two of them. The four tubes were then placed at the same focal distance, namely, twelve centimetres, from the tungsten target of a Coolidge tube, and two of the tubes, one of which contained starch, were protected by a sheet of lead. A sheet of black photographic paper was used to screen any light coming from the tube and irradiation was carried out for an hour with different voltages. The results proved that X radiation does not cause the decomposition of aqueous iodine either alone or with starch added. Thus using forty kilovolts and two and a half milliamperes of current with a solution, three cubic centimetres of which required 0.20 cubic centimetre of N/500 thiosulphate, the two tubes containing aqueous iodine, one exposed to the rays, the other protected by lead, each required

0.16 cubic centimetre of N/500 thiosulphate at the end of the radiation. The two solutions to which starch had been added, required 0.18 cubic centimetre for the irradiated and 0.19 cubic centimetre for the protected. Using sixty-five kilovolts and two and a half milliamperes of current, the tubes, especially the two unprotected by lead, were exposed to a higher temperature with a small increase in the loss of iodine caused by reaction with water. The figures for the protected and unprotected tubes showed no evidence of decomposition by X rays.

In connexion with work on the decomposition of potassium iodide referred to later, it was desirable to know whether an acidified solution of iodine would decompose on treatment with X rays. Solutions were prepared of one-thousandth normal strength in sulphuric acid and irradiated in company with neutral solutions. The tubes in this case contained two cubic centimetres requiring 0.32 cubic centimetre of N/500 thiosulphate, and the result after an hour's irradiation at forty kilovolts and two and a half milliamperes of current is given below.

Two drops of starch solution were added to the contents of each tube before irradiation.

	N/500 thiosulphate.
Aqueous iodine	0.30 cubic centimetre.
Acidified aqueous iodine	0.30 cubic centimetre.
Aqueous iodine	0.31 cubic centimetre.
Acidified aqueous iodine } protected by lead	0.30 cubic centimetre.

The above results with X rays definitely prove that these rays, like γ rays, do not decompose an aqueous iodine solution. Bordier's result showing rapid disappearance of iodine was quite probably due to the action of iodine on the paraffin used by him to coat the cardboard box.

The decomposition of aqueous solutions of the alkaline iodides by γ rays was first studied by Kailan,⁽²⁾⁽³⁾ who used large quantities of radium salts as the source of the rays and showed that slight separation of iodine resulted. The liberated iodine was estimated by titration with very dilute solutions of thiosulphate. When this work was repeated at Sydney, with the use of platinum three milligramme needles on one cubic centimetre samples of 10% potassium iodide for a period of two days, no blue colour was obtained on addition of a drop of starch solution. The reason for this was that with a three milligramme needle the liberation of iodine is so slow that it cannot keep pace with the reaction between iodine and water, but by making use of the fact that the starch iodine compound is more stable in presence of water than iodine itself, the decomposition of the iodine was observed. Starch was added to the potassium iodide solution before the needles were dropped in and a blue colour slowly developed; even after several days very little iodine was set free. Tubes without needles remained colourless. X radiation was also found to produce slight decomposition. Kailan observed that the addition of small quantities of acid to the potassium iodide solution considerably increased the decomposition. In view of the fact, however, that the addition of acid to a solution of alkaline iodide causes separation of iodine, it was

thought of interest to repeat Kailan's work in order to determine whether the increased decomposition was due to greater action of the rays or simply to the action of the acid itself. With three milligramme needles placed in one cubic centimetre of solution to which a drop of starch solution was added, 10% potassium iodide solutions were used. The acidification employed was N/1000 sulphuric acid. The following result was obtained:

	N/500 thiosulphate.
Neutral potassium iodide + needle ..	0.02 cubic centimetre.
Acidified potassium iodide + needle ..	0.24 cubic centimetre.
Acidified potassium iodide	0.06 cubic centimetre.

The conclusion was that in the same period of time the action of the rays in presence of acid was about three times as great as the action of the acid and rays taken separately. In other words, the acid had an accelerating influence on the action of the rays.

The addition of acid in the case of X rays was then tried. Here the effect can be gauged with greater certainty because the energy is more rapidly applied and the reverse effect of the decomposition of the liberated iodine with water is much reduced. Experiments were conducted with two cubic centimetres of solution placed in tubes twelve centimetres from the target of an X ray bulb and irradiated for one hour at forty kilovolts and two and a half milliamperes of current using 10% potassium iodide solution to which starch was added. As before the acidification was N/1000 sulphuric acid giving a pH of 3.5.

	N/1000 thiosulphate.
Neutral	0.01 cubic centimetre.
Acidified	0.26 cubic centimetre.
Neutral { protected by }	0.00 cubic centimetre.
Acidified { lead }	0.01 cubic centimetre.

Since it has already been shown that X rays do not decompose iodine in neutral or acid solution, the result proves that the addition of a small amount of acid has a most marked accelerating effect on the action of the rays. This interesting and very definite result is in agreement with what is known about certain reactions produced by ultra-violet light. Thus in the decomposition of potassium nitrate by ultra-violet light an increased action is obtained by increasing the alkalinity of the solution. It is well known that the radio-sensitivity of living tissue is altered by change of conditions. Stephens⁽⁴⁾ has pointed out that a rich blood supply favours radio-sensitivity whilst infection lowers it. It may be that an alteration in the hydrogen ion concentration is concerned here, in which case it may be possible artificially to effect an alteration in the radio-sensitivity of a tissue by changing its hydrogen ion concentration.

Conclusions.

1. Bordier's statement that aqueous solutions of iodine are decomposed by X rays is disproved.
2. Gamma rays also have been found without effect.
3. The decomposition of potassium iodide in neutral and acidified solutions first studied by

Kailan with γ rays has been examined in detail with both γ and X rays. Attention is drawn to the marked acceleration of the action of the rays by the addition of small amounts of acid.

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- (1) M. H. Bordier: "Action des rayons X sur l'iode et l'iodure d'amidon en milieu aqueux," *Comptes Rendus de l'Académie des Sciences*, Tome CLXIII, September 18, 1916, page 291.
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THE PRIMARY FELLOWSHIP EXAMINATION.

By JULIAN SMITH, JUNIOR, F.R.C.S. (England),
Honorary Surgeon to Out-patients, Melbourne Hospital.

IN September, 1931, the Primary Examination for the Fellowship of the Royal College of Surgeons of England will be held in Australia for the first time. To all those attempting the Fellowship Examination, the great advantages of this event will at once be obvious. In the first place, candidates will travel to England only after they have obtained the Primary Examination and thus the whole of their time abroad may be devoted to the study of surgery. In the second place, third year students may present themselves for examination. There can be no doubt that this is the ideal way to attempt the Fellowship. The Primary may be obtained while a man is in full possession of his knowledge of anatomy and physiology in third year. He may then continue his course with the happy knowledge that in a few years he may proceed abroad to achieve his ultimate goal of qualification—to become a Fellow of the Royal College of Surgeons, without having to reclaim from the limbo the finer points of anatomy and physiology wherein they were cast after third year. This in no way implies that these are subjects which have to be learnt for examination purposes and then forgotten. An exact knowledge of them is an important and necessary part of the armamentarium of every surgeon. But there can be no denying that there is a very great difference between the standard required for the Primary Fellowship and that which will adequately serve the surgeon in the practice of his art. The examination will be conducted along lines identical to those in England. It may, therefore, be of some use to those who contemplate presenting themselves for examination to know some of the conditions and requirements of their task. The writer must at once disclaim that this brief communication is an attempt to guide prospective candidates along a short and narrow (and thus somewhat hazardous) path to success. There will be dis-

appointment for those who seek herein for the time-honoured examination gambits. It is ill advised to attempt to satisfy the inquiring minds of examiners by a knowledge attained by short cuts. It will, one thinks, be admitted by most who have the experience, that the examination is a searching one. While this is undoubtedly true, one wishes at once to remove any impression that it is a terrifying ordeal, and insist that it is not. The examination is well within the reach of the average Australian student. The difficulty which confronts a candidate will be to know something of what is required of him.

The toad beneath the harrow knows
 Exactly where each tooth-point goes.
 The butterfly upon the road
 Preaches contentment to that toad.

The writer's apology for this communication is that he, like all others who have struggled with the Primary Fellowship, still retains the mental scars of many tooth-points. The latter are ever present, but it is the writer's hope that those in a similar plight may be forewarned by him and thus, to some extent, forearmed against the pricks of the examination.

The subjects of the examination are anatomy and physiology and it might be well to discuss these subjects separately and in some detail.

Anatomy.

In prescribing a course of reading for the examination the various Australian teachers of anatomy will no doubt prefer certain books. In general, the candidate should read the book with which he is most familiar. Let it be said at once that changing from one book to another of the same type is very inadvisable. The candidate should try to cover the whole of his subject completely with as few books as possible. There is, however, no royal road to success in the matter of a textbook, the only important point being that it should not be too large for rapid revision. There are some books which have rightly become highly favoured by English teachers and students. Cunningham's "Practical Anatomy" is an excellent book upon which to base one's dissections. It has recently been printed in three volumes, but the new edition contains little that is not included in the old edition of two volumes. Therefore, the latter is to be preferred, as there is not so much repetition and as it is shorter. Gray's or Cunningham's "Anatomy" may be used for reference and for detail on certain points, but no attempt should be made to use either of these books as the student's main book for reading.

Frazer's "Anatomy of the Human Skeleton" should be read by all candidates. It stands without a rival as a work on osteology. It deals not only with the dry bones, but with their muscular coverings, the nerves and vessels in relation. Candidates are strongly advised to make themselves very well acquainted with this book, as it contains a vast amount of anatomy, presented in a way quite different from the usual textbooks; and, moreover, in a way that has appealed in the past to Fellowship examiners. Many good coaches have said that if one

book is to be read on anatomy, the best book is the smallest. In this apparent paradox there is some great wisdom. Of the small books, there is none better than Jamieson's "A Companion to the Manuals of Practical Anatomy." This is extremely condensed anatomy and requires a certain standard of anatomical knowledge before it can be read with profit, but as a book for revision it is unrivalled. As one becomes more acquainted with this book, one will be rather surprised, in view of its size, with the amount of detail which it contains.

Embryology usually forms a part of one or more of the four questions in the paper. For example, a question set in recent years was: "Describe the abdominal surface of the diaphragm with special reference to peritoneal reflections and to visceral areas. How is the diaphragm developed?" It is rarely that embryology forms the whole of one question and, moreover, it is only the development of adult structures which are asked for; that is, the development of the placenta, chorion, and such-like structures are never seen in anatomy papers. A good and not too detailed account of the subject is contained in Gray's "Anatomy." Anatomical variations or anomalies are often included in a question. For example, "Describe the interosseous arteries of the forearm, giving their anastomoses. State what you know of their variation and development." An elementary knowledge of morphology is required: "Describe the *levator ani*. Give its relations and discuss its morphology and actions." The lecturers to the various Fellowship classes will undoubtedly regard certain morphological points as pertinent and attention will be paid to them.

The field to be covered for the Primary Fellowship is a wide one and there is a limit to the amount of the subject which can be absorbed in a short time. But candidates may take comfort in the fact that they will not fail because they are a little hazy about the morphology of the *pectoralis minor* or if they possess a very limited knowledge of the variations of the bile ducts. But they will fail if they do not know the anatomy of these structures and all important structures like them. The big points of anatomy must be known and they must be known extremely well. It is easy for one to advise another how to work. It is rarely that this advice is of any help. Each man knows himself how he works best. But if one may presume to suggest the lines along which reading should be conducted, if a certain anatomical standard has been reached, then concentrate on a small book, such as Jamieson's, and read Frazer's book again and again. It will not be absorbed until it has been read many times and it is necessary to know this book well.

Physiology.

There are many who will affirm that physiology is the more difficult subject of the examination. Anatomical facts admit to little variance. If they are known, the answer to a question is a simple matter. Physiology, on the other hand, abounds with theory as well as fact. Questions can be set in a variety of ways and it requires no mean

degree of mental dissection to collect from one's knowledge just that matter which would serve as a relevant answer.

Histology is included with physiology. The candidate will merely be required to "spot" the ordinary sections. A knowledge of elementary organic chemistry is necessary. The formulæ of substances of physiological interest must be known and also the simple tests and estimations for these substances. Candidates should learn one method only of estimation and should concentrate upon the principle of the method rather than the detail. An excellent book on this subject is that by Halliburton, Hewitt and Robson, the first hundred or so pages of which contain a simple presentation of biochemistry, discussing, for example, the fats, proteins and carbohydrates. This book should be very useful to graduates who wish to brush up their knowledge of the subject. Another elementary book to be recommended (and it can be read in a week-end) is that by Parsons. In addition, candidates must be able to recognize common physiological apparatus, for example, the Douglas bag, apparatus for gas analysis and blood estimations and the like. A good third-year standard will satisfy the examiners in histology and biochemistry. For general physiology, the very excellent book by Dr. Sampson Wright on "Applied Physiology" should be read. At the beginning of each chapter in the new edition certain clinical subjects are italicized, and these may be omitted with safety. Those who have been graduated for some years may find that they have forgotten some of their physiology. Before attempting Dr. Wright's book they are advised to take a book like Bainbridge and Menzies and read it straight through without any drastic efforts at memorization. This will serve to create the necessary physiological frame of mind upon which the more detailed aspects of physiology may be implanted later. It is inadvisable to attempt to read a book like Starling's "Physiology." It is far too large and requires an enormous amount of reading, a great amount of which will be useless for the purposes of the examination. The special senses are not dealt with by Dr. Wright in his book, but candidates will find a presentation of this subject to their liking in one or other textbook of physiology.

There will be some grounds for complaint that this article is mostly the writer's opinion of that anatomical and physiological literature which must be read for the Primary Fellowship Examination. However, a man who is happy in his choice of books may be well fitted to write a good paper and it is his paper of all things in this examination which will stand him in good stead or bad. (It may be mentioned that in anatomy there are four questions and in physiology six questions, of which four only may be answered.)

As a general rule, a man stands or falls by his paper. In anatomy, if the facts are known, all that remains is to set down those which are demanded. In physiology the conditions are different. The third-year student is apt to regard this subject as

one composed of water-tight compartments. He may expect a question on the circulatory system, one dealing with the kidneys, another on the respiratory system, and may feel confident to answer them. In the Primary Fellowship it is absolutely essential that the candidate should realize that physiology is a single subject and that the human body is a perfect unit, possessing the most delicate and efficient compensating powers in virtue of its unity. The candidate, therefore, must not expect to find in the paper questions dealing with single and separate systems of the body. The examiners will presume that he has passed his physiological childhood and now approaches the subject in a manner more becoming to maturity. Questions are set in such a way that the candidate will be forced to call upon his knowledge of perhaps three or four systems of the body and to blend this into a logical and coherent answer. In short, he must be able to juggle with physiological facts; for example: "Discuss the means by which the reaction of the blood is regulated." An accurate knowledge of the blood itself and its hydrogen ion concentration will be of little use in answering this question if the candidate cannot correlate his knowledge of the "buffers" in the body fluids and how these in their turn are influenced by the activity of the lungs and kidneys. Or again: "Give an account of the metabolism of the calcium compounds which normally occur in the body." An answer to this question involves a knowledge of how calcium is absorbed by the digestive system, in what form it exists in the tissue fluids, how the amount is regulated by the ductless glands, what function it exercises, for example, on heart muscle, on nerve, in bone formation, how it is excreted by the kidneys.

These examples are just some of the many that might be quoted to show how important it is for a candidate to be able to collect his facts consecutively (even though they be spread out over many chapters of a textbook) and to mould them into a compact and readable answer. In addition, adequate experimental evidence must be offered for many of the statements made. In both subjects there is an oral examination. In anatomy, besides being questioned on dissected parts, the candidate will be expected to display a sound knowledge of osteology. In the physiology "viva," three slides are given to be "spotted," one may be asked to perform a biochemical test, physiological apparatus may be shown for recognition and description of its usage, and there will be a "chat" on physiology in general. All the advice one can give here (and one feels sure it is worth giving) is to give to a question the answer which is obvious and sensible. Do not be pedantic in the Fellowship Examination. Let it be remembered also that the answer to a question nearly always determines the examiner's next question. An actual example will emphasize the point. A candidate was asked what were the functions of the kidney. The answer appeared to be too obvious and there was a temptation to draw the examiner's attention to the rôle of the kidneys in regulating the osmotic pressure of the tissue fluids.

This answer would have been followed, no doubt, by a question on osmosis and the candidate, much to his discomfiture, would have been plunged into the depths of a most intricate subject. Instead of this, the sensible and obvious answer was given—that the kidneys secreted the urine, and the rest of the oral was given up to a discussion on the nitrogenous constituents of the urine. As a topic of conversation with an examiner, there is little doubt that the physiological tiro would prefer this subject to the former.

Those who have surgical ambition will find in the Primary Fellowship a task well worthy of their steel. That the Royal College of Surgeons should wish Australians to have the opportunity of completing the first part of their task at home should be taken as a compliment. For such it is, and we should not be unmindful of it. Those who strive will, in the fullness of time, see the accomplishment of their task. They will look back on the many hours of toil and see mingled with them so many that were joyous, and find the reward of it all. For they will possess a distinction of which they may justly feel proud. The number of Australians who each year journey abroad in the effort to gain their Fellowship, may be taken as a criterion of the respect with which this distinction is regarded. The influence of the Royal College of Surgeons on Australian surgery has been a great one. Our pioneer surgeons, Fitzgerald, Syme, Hamilton Russell, to name a few of the famous, gained perhaps not a little of their inspiration to their great deeds from those teachers at which feet they sat as students in England.

As a nation still in its infancy, we have some right to be proud of our surgical attainments. If we may claim a closer association with the Royal College of Surgeons, then our lot is a happy one. For what better urge to further and greater endeavour exists than to strive to follow in the footsteps of its great men, to emulate their deeds and to build up for ourselves its tradition and ideals?

Reports of Cases.

GUNSHOT WOUND IN THE ABDOMEN: PEA RIFLE BULLET IN THE GALL BLADDER.

By E. S. MEYERS, M.B. (Sydney),
Honorary Surgeon, Brisbane Public Hospital, Brisbane.

G.L., A MALE, aged fourteen years, a school boy, was admitted to Brisbane Hospital on September 7, 1930, complaining of being "shot in the abdomen."

The patient was taking a gun to pieces on the morning of September 7, 1930, when it went off, the bullet entering his abdomen midway between the umbilicus and the *symphysis pubis*, slightly to the right. The patient had not passed urine since the accident.

On examination the patient was pale, the temperature was 36.1° C. (97° F.) and the pulse rate 88. The wound of entry was found to the right of the mid-line midway between the *symphysis pubis* and the umbilicus. Definite tenderness and rigidity were present, but there was no shifting dullness. It was decided to operate immediately.

Gas and oxygen anæsthesia was induced by Dr. Beith; Dr. H. C. Murphy assisted.

A paramedian incision was made lateral to the wound of exit and the abdomen was opened. A considerable quantity of blood (about 450 cubic centimetres) was found in the peritoneal cavity and was removed by suction apparatus. Examination of the pelvis failed to reveal a wound of the bowel or bladder. The small and large bowel were carefully examined in turn and no lesion was found. The incision was enlarged upwards and a small tear in the wall of the stomach near the pyloric end on the anterior surface was found. This was oversewn. Further examination revealed a small linear wound in the gall bladder near the lower surface of the liver. The gall bladder was palpated and a foreign body, the size of a pea, was felt. The gall bladder was opened and a pea rifle bullet extracted. The gall bladder and pelvis were drained. The patient's condition was grave for a few days, otherwise convalescence was normal and the patient was discharged well on September 28, 1930.

Comment.

The wisdom of draining the gall bladder in a case of this sort was called in question by one surgeon. It appeared, however, to be a wise precaution, and in cases of this sort there is no hard and fast rule for guidance.

SPRUE AND AMEBIC DYSENTERY.

By HAROLD CRAWFORD, M.B., B.S. (Sydney),

AND

NOEL M. GUTTERIDGE, M.B., B.S. (Melbourne),
Brisbane.

Mr. G., aged fifty-six years, was first seen on November 22, 1929. Two years previously, in China, he suffered from an attack of acute dysentery; since then he had had continuous diarrhoea with sore mouth and tongue. His stools were bulky and tan coloured. He complained of gradual loss of weight, strength and colour and occasional attacks of vomiting if food were taken before the bowels were opened.

Examination showed that he was pale and wasted (about 37.8 kilograms or six stone in weight); his temperature was subnormal. The tongue was not furred, it was fairly moist, except at the centre, where there was a tendency to glazing with loss of surface epithelium, the papillae were prominent anteriorly. Stools were frequent, very copious and tan coloured; they were strongly suggestive of sprue. On account of the history it was thought that this might be a case of sprue associated with a chronic infection by *Entamoeba histolytica*.

Blood examination on November 25, 1929, revealed the following:

Red blood cells, per cubic millimetre ..	3,030,000
Hæmoglobin value	46%
Leucocytes, per cubic millimetre	9,800
Polymorphonuclear neutrophile cells ..	71.5%
Eosinophile cells	0.5%
Small lymphocytes	26.5%
Large lymphocytes	1.5%

The blood coagulation time (test tube inversion method) was three minutes thirty-eight seconds. The red blood cells showed anisocytosis with slight macrocytosis. The blood serum gave no reaction to the Wassermann test. Examination of two fresh specimens of faeces on November 24 and 25 showed the presence of cysts of *Entamoeba histolytica*.

The administration of emetine bismuth iodide in pill form was commenced immediately; 0.18 gramme (three grains) was given each evening for twelve doses and he was kept on a strict milk diet. The reaction to the emetine was very severe and occasioned watery diarrhoea and vomiting, which were controlled by occasional 0.6 mil (ten minim) doses of tincture of opium. His general condition did not improve and ecchymoses were noticed.

The tongue became dry, glazed and cracked and he was almost in *extremis*.

On December 12, 1929, his hæmoglobin value was 49%. The red blood cells numbered 1,850,000 per cubic millimetre and leucocytes 4,800 per cubic millimetre. The differential leucocyte count was: Polymorphonuclear cells 56%, small lymphocytes 41%, large lymphocytes 3%. No amebic cysts were seen in fresh specimens obtained on December 12 and 17.

On December 23 a blood transfusion was carried out after a suitable donor had been selected by blood matching, and he received 750 cubic centimetres (25 ounces) of citrated blood. The improvement was immediate. On January 16 the red blood cells were 2,593,000 per cubic millimetre and the leucocytes 5,310 per cubic millimetre. On January 27, 1930, the stools were formed for the first time since the onset of the illness. On February 6 the hæmoglobin was 47%, red blood cells 2,850,000 per cubic millimetre and leucocytes 4,800 per cubic millimetre.

On February 11, as his general condition seemed stationary, another transfusion of 750 cubic centimetres of citrated blood was given. From then on improvement continued. The diet was increased first by the addition of bananas in gradually increasing quantity and then meat.

When seen in August, 1930, he was 75.6 kilograms (twelve stone) in weight; the bowels acted regularly each morning at 6 a.m. and the stools were normal in size, colour and consistency.

Comment.

This case is of interest in that it was a typical case of sprue complicated by an amebic infection in a chronic form. The cure was effected by the administration of emetine bismuth iodide followed by blood transfusion.

Reviews.

THE HEALTH OF THE PUBLIC.

IN "Personal and Community Health" Clair Elsmere Turner, Professor of Biology and Public Health in the Massachusetts Institute of Technology, deals with public health from the standpoint of what the college or professional man who is not a sanitarian, needs to know in order to protect his family and meet his responsibility as a citizen.¹

This is a typical American publication in which an effort is made to evaluate individual health, there actually being a health scale for grading one's own health, based upon bodily condition and habits of living. This health scale, prepared by Dr. Thomas D. Wood, of Columbia University, gives fifteen marks for subjective evidences, such as three marks each for enjoyment and zest in work and play, freedom from persistent worry and anxiety. The other seventy-five marks are given for objective factors and evidences of health. Thus four marks are given for having eight to nine hours in bed and to sleep daily, and three to devoting one to two hours daily to social recreation or recreational reading or other recreational occupation. Thirty-eight out of the 100 marks are allotted for freedom from remediable handicaps, including three for muscle flabbiness.

There is also reproduced a so-called Nature's health and beauty score card, as well as a list of twenty qualities, the presence or absence of which determines one's strength of personality, such as ambition, ability to size up people, and capacity to delegate work. There is much valuable information on nutrition and diet, oral hygiene, exercise and on the care of the individual health.

"The Child's Ten Commandments to Parents"—"Remember the prenatal days and keep them properly. Other days shalt thou do hard labour if need be, but these are the months that are mine, and thou shalt seek advice of thy physician and so conduct thy life and that of thy family that I may become strong and not afflicted in

¹ "Personal and Community Health," by Clair Elsmere Turner, M.A., Dr.P.H.; Third Edition; 1930. St. Louis: The C. V. Mosby Company; Melbourne: W. Ramsay. Demy 8vo., pp. 443, with illustrations.

these days of my coming"—shows that the book is of the nature of popular propaganda.

Anyone conducting a campaign to educate the public in questions of communal and personal health would get some valuable material from this book, which takes all health teaching as its province.

SLEEPLESSNESS.

A SHORT survey of the physiology and pathology of sleep, under the limitations of present day knowledge, is provided in Dr. Crichton-Miller's "Insomnia."¹ Sleep is a simple phenomenon of our experience, but still eludes scientific description. Even the "conditioned sleep" of Pavlov's laboratory animals is not an explanation of the problem, and the author gently adds that a clinical exhibition of the theory might cause the sleepless patient to reply: "Is thy servant a dog . . . ?" The psychological aspect is discussed in a brief summary of the modern theories of psychopathology. Treatment of insomnia is considered at three stages in the presentation of the subject matter of the book. The chapter on general treatment is written in a Shavian mood and the criticisms of the conventional misunderstandings to which the insomniac is subjected, are both pithy and practical. Medicinal treatment does not include an exhaustive list of hypnotics, but straightforward indications and contraindications are laid down and the author's personal methods are explained. If any criticism could be offered, it would be that there is no consideration of the case in which the patient is taken into the confidence of the practitioner in the rationing of drugs. The difficulties involved in the use of psychological methods are illustrated in a detailed consideration of nine cases from the author's practice. In the majority of these psychotherapy was not applicable or ineffective. The author has achieved his aim of presenting to the busy practitioner briefly and intelligibly certain outstanding features of the problem of insomnia, and his book can be recommended as an excellent summary of modern views and methods.

GNORRHŒA IN THE MALE.

THE first edition of Wolbarst's "Gonococcal Infection in the Male" having been quickly exhausted, a second edition has now made its appearance, carefully revised and improved by the addition of new matter and useful illustrations.² As the volume is intended primarily for the general practitioner, attention is directed in this edition, as in its predecessor, chiefly to those aspects of diagnosis and treatment which have a practical relation to the cure of the patient. On this account the bacteriology and pathology of gonorrhœa are dealt with only to the extent of their relation to diagnosis and the determination of cure.

In its form the book follows conventional lines. There are chapters dealing with the anatomy of the parts usually involved and with the diagnosis, clinical aspect and treatment of gonorrhœa and its various complications.

One section deals with the application of diathermy in various types of gonococcal infection, while if the practitioner desires information as to the source of pus and shreds in the urine, he will find in the chapter devoted to this subject considerable information about various procedures which may be employed, including the author's five glass catheter test.

Not the least important chapter, entitled "When is Gonorrhœa Cured?" will be read with profit by any who assume that this important decision can be reached without

a searching trial and most careful and conscientious consideration of the evidence.

The book is profusely illustrated and well printed. It may confidently be recommended to all those who are called on to treat the affections with which it deals.

PROGRESS IN DERMATOLOGY, SYPHILIS AND UROLOGY.

ONCE again the year's progress in dermatology and syphilis, edited by Dr. W. A. Pusey, Dr. F. E. Seneor and Dr. M. S. Wien, and on urology by Dr. J. H. Cunningham, has been published in the "Practical Medicine Series."¹ This 1929 series contains 448 pages. Of these consideration of dermatology and syphilis occupies a little more than half and urology the remainder, with a full index of nearly thirty pages.

This year's report as set out by these well known men in dermatology and syphilology is a very complete one and contains extracts on the latest observations and discoveries in the treatment of these two important subjects.

These records have been collected from all parts of the world. The book is a valuable one, not so much for the general practitioner, but for the specialist, for whom it is intended.

The section on urology, which occupies nearly half the book, is very well done. It follows an ordered plan, opening with a discussion on "general conditions." Herein are discussed many disease subjects of urological interest. Appropriate illustrations and diagrams are included, which serve very well to add lucidity to the various descriptions. Working along the same lines the author then proceeds to take the urogenital tract piecemeal from the adrenal to the urethra. The specialist will find here a useful, complete and well set out summary of the year's work in urology from all sources.

A SHORTER SURGERY.

DR. McNEILL LOVE states that his book, "A Shorter Surgery," has been written deliberately for the benefit of senior students preparing for examination.² Except for his modesty he might quite honestly have added "for their teachers as well." The whole range has been so cleverly systematized that nothing has been left to chance and not touched upon in its essentials. In spite of this, the book is quite small; it contains only 360 pages, with good sized type and is not heavy to hold. In fact, it might be taken for a modern novel, but luckily its contents, for some persons at least, are far more interesting. A prominent feature about the book is the emphasis placed upon the value both of history and of physical signs in making a diagnosis; the impression is rightly left that laboratory tests, use of X rays *et cetera* have their chief use in confirming the diagnosis. This is a point of view which unfortunately appears not to be frequently taken by the present day student, who is apt to look for the physical signs after viewing the reports from the special departments.

A typical chapter is number XVIII, on the pancreas and spleen. Although only taking up twelve pages, it gives a surprisingly comprehensive account of the pathological changes in and surgical treatment of disease of these organs.

The modern use of radium in the treatment of selected new growths is constantly touched upon. In fact the book has been brought thoroughly up to date in this edition.

¹"Insomnia: An Outline for the Practitioner," by H. Crichton-Miller, M.A., M.D.; 1930. London: Edward Arnold and Company. Demy 8vo., pp. 184. Price: 10s. 6d. net.

²"Gonococcal Infection in the Male," by A. L. Wolbarst, M.D.; Second Edition, Revised and Enlarged; 1930. St. Louis: The C. V. Mosby Company; Melbourne: W. Ramsay, Royal 8vo., pp. 297, with 140 illustrations, including 7 colour plates. Price: \$5.50 net.

¹"Practical Medicine Series, comprising Eight Volumes on the Year's Progress in Medicine and Surgery: Dermatology and Syphilis," edited by William Allen Pusey, A.M., M.D., and Francis Eugene Seneor, B.S., M.D., with the collaboration of Max S. Wien, M.D.; "Urology," edited by John H. Cunningham, M.D.; 1929. Chicago: The Year Book Publishers. Crown 8vo., pp. 448, with illustrations. Price: \$2.25 net.

²"A Shorter Surgery: A Practical Manual for Senior Students," by R. J. McNeill Love, M.B., M.S. (Lond.), F.R.C.S. (Eng.); Second Edition; 1930. London: H. K. Lewis and Company, Limited. Demy 8vo., with seventy-four illustrations including thirty-one plates (one coloured). Price: 16s. net.

The Medical Journal of Australia

SATURDAY, DECEMBER 20, 1930.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

THE JOURNAL.

At a recent meeting of the Queensland Branch of the British Medical Association the Editor of THE MEDICAL JOURNAL OF AUSTRALIA spoke on the function and scope of the journal and invited discussion from the members. It was apparent first of all that all the members were not fully cognizant of the range of subjects necessarily covered in these pages nor of the attendant difficulties. Secondly, it was evident that members think about the journal and read it, for they came forward with criticism, favourable and unfavourable. Thirdly, there was found a desire to cooperate. It is, of course, necessary that the members of the British Medical Association in Australia should know what the task of the journal is; it is healthy to have criticism and it is essential that all and sundry should cooperate.

When this journal was started on its course in July, 1914, its existence was based on certain articles of association. Those who drew up these articles, were wise in that they made the basis comprehensive. THE MEDICAL JOURNAL OF AUSTRALIA is the property of The Australasian Medical Publishing Company, Limited, and the members of this company are elected by the several Branches of the British Medical Association in Australia. One clause of the Memorandum of Association in

which the objects of The Australasian Medical Publishing Company, Limited, are defined, is as follows:

To conduct establish print publish and circulate or otherwise deal with any newspaper or newspapers journal or journals magazine or magazines and other publications literary works and undertakings and in particular a journal to be the official journal or organ of the respective Branches of the British Medical Association in Australasia and New Zealand represented in the Company.

If THE MEDICAL JOURNAL OF AUSTRALIA is to act as the voice of the Branches, it must necessarily have the same general aims and objects as the British Medical Association. These, as is well known, are the promotion of the medical and allied sciences and the maintenance of the honour and interests of the medical profession. It must be noted that the scientific is the first object; the non-scientific, or as we choose to call them, the medico-political activities, take the second place. So must it be with the journal. Both spheres of activity must be exploited, but the scientific must predominate. For this reason pride of place is given to original articles in each issue. As far as scientific articles are concerned, THE MEDICAL JOURNAL OF AUSTRALIA has several functions. It is the medium in which the scientific papers read at Branch meetings are published. It also serves for the publication of much of the research work carried out in Australia. Sometimes the general practitioner is appalled or disappointed when he is confronted by a highly technical article with no apparent clinical bearing. In these circumstances he has two things to remember. In the first place, the clinical bearing which appeals to him most, may become obvious as the particular piece of research is further elaborated. In the second place, Australian research should be published in Australia. It would be most damaging to Australian prestige if all the research work were sent overseas for publication. There will doubtless come a time when a journal devoted to Australian medical research will be published, but that time is not yet. Although in the meantime THE MEDICAL JOURNAL OF AUSTRALIA has to act as the mouthpiece of Australian research workers, it must be remembered that even if there were a journal devoted entirely to medical research, it would be neither fit nor proper to exclude all medical research from these pages. Medical practitioners

are members of a learned profession, they have grown beyond the spoon-feeding or milk food stage and should be prepared to assimilate a little more solid nourishment. Signs have not been wanting of a growing appreciation of scientific contributions. What is aimed at is a judicious admixture of the purely scientific and the clinical. Often it is exceedingly difficult to effect a blending owing to lack of ingredients. Clinicians can expect to get out of the journal only what they put into it. The research workers offer plenty of matter. Those who do the editorial writing cannot manufacture clinical reports; clinicians must do it. On the medico-political side an appeal is being made to the Councils of those Branches which do not send news to the journal to supply occasional data so that each Branch may know what the others are doing.

Criticism has been mentioned. It is welcome when it is made in good faith and in a desire to help. It need not necessarily be favourable. Some of the comments made in Brisbane were useful and will be acted upon. After criticism, as already stated, should come cooperation. Cooperation in this instance involves not only the taking of a lively interest in the literary matter of the journal, but also cooperation in the other activities of The Australasian Medical Publishing Company, Limited.

Current Comment.

VISCEROPTOSIS.

PERHAPS no condition has been the cause of more unnecessary "treatment" than visceroptosis. Before the establishment of the X rays as an efficient and trustworthy aid to diagnosis the sufferer from visceroptosis was all too frequently subjected to needless surgical procedures. Plied with bromides and soft words, she passed from physician to surgeon and back again. This organ was hitched and that fixed; this tucked and that drained; this removed, that foreshortened and the other probed and left; every nook and cranny of her unfortunate abdominal cavity, even unto its most intimate recesses, was explored and found free of disease. At the end of it all the patient was left in a state of extreme unhappiness, relieved occasionally when, perhaps in the outdoor department of some hospital, she had the opportunity of recounting the stories of her woes and her past adventures in the operating theatre and the consulting room to those less experienced than herself in the handicraft of the surgeon

and the arts of the physician. Even now is occasionally seen the patient so marked with scars that if each alternate square were painted black, her anterior abdominal wall could do service as a draught board. She complains of vague abdominal discomfort, she suffers from visceroptosis and probably adhesions and she will in all likelihood continue so to suffer and complain. On the other hand, the knowledge gained by radiological observation has resulted in altered conceptions of the normal anatomical positions of the abdominal viscera; hence a condition which formerly would have appeared to warrant a diagnosis of visceroptosis may now be regarded as normal. Nevertheless, there is still some disagreement concerning the extent to which an organ may be displaced and yet remain within normal anatomical limits.

The pathogenesis of visceroptosis has been the source of some controversy. Some authorities have expressed the opinion that it is due to congenital imperfections in the mesenteric ligaments of the viscera while others have declared just as emphatically that it is almost invariably acquired. There is considerable evidence in favour of both views. While there can be little doubt that visceroptosis may be acquired, it is possible that in all instances there is some congenital fault, such as lack of intra-abdominal supports, malformed trunk or some other factor. Probably the most interesting theory regarding the causation of visceroptosis is that presented by Keith, who believes that the normal position of the organs depends on a nicety of balance of the muscles of inspiration and expiration. When this balance is lost, for example, through weakness of the expiratory muscles, the diaphragm gains control and causes displacement of the abdominal viscera by persistent downward pressure. Nephroptosis is more frequent on the right side than on the left, because the right kidney is pushed downward by the firm, unyielding liver, whereas the organs above the left kidney protect it to some extent by acting rather in the manner of a cushion or shock absorber. Keith believes that the mesenteries are only of subsidiary importance.

The conclusions drawn from a clinical study of visceroptosis have recently been published by Blanton P. Seward who is dissatisfied with former descriptions of the condition, as they fail to emphasize the character of the symptoms and their frequent simulation of organic disease, and the importance of the effect of ptosis on the efficiency of the individual.¹ Seward states that the intestinal tract is held in position by the mesenteric attachments, the intraabdominal fat, intraabdominal pressure and the shape of the abdomen. He remarks that the function of the mesentery as a support is probably of less importance than its service as a medium for the passage of blood and lymph vessels to the intestine. When ptosis causes excessive tension on the mesentery, disturbances of circulation are likely to result; the effects may be mild, but may be so

¹ *The American Journal of the Medical Sciences*, October, 1930.

severe as to alter the circulation throughout the body. He points out that intraabdominal fat aids in supporting the viscera by providing them with a cushion and by increasing the intraabdominal pressure. Absorption of fat from the lower part of the abdominal cavity may tend to cause the viscera to sag. Seward remarks that Wagoner found in his experiments on animals and cadavers that the intraabdominal pressure normally varied from -4 to -20 millimetres of water, but that when the body was placed in the upright position the negative pressure increased, the abdominal cavity enlarged and the viscera tended to fall. One very interesting conclusion drawn by Wagoner was that as the negative pressure within the abdomen increased peristalsis diminished. Seward believes that this is an important factor in the causation of visceroptosis; intestinal stasis leads to increase in the quantity of the intestinal contents, loss of tone of the involuntary muscle and sagging of the bowel. Too much reliance, however, should not be placed on the results of experiments either on dead tissue or on animals, whose normal position is on all four extremities and whose bodily structure is not adaptable to the maintenance of an upright attitude.

In Seward's opinion the shape of the abdominal cavity has an important influence on the position of the intestines. The sthenic person whose chest is short and broad, whose abdomen is relatively long and pelvis relatively small, has an erect bearing and possesses strong abdominal muscles of good tone. His viscera are mainly situated within the upper part of the abdomen. The asthenic individual has a relatively long chest and short abdomen and wide pelvis; he adopts a passive or stooped posture; the upper part of his abdomen is apt to be constricted, his abdominal muscles are relaxed and the lower part of his abdomen is protuberant. There is a tendency for his abdominal viscera to fall.

Seward recognizes both congenital and acquired types of visceroptosis, but believes that in the majority of instances there is an inherent predisposing structural weakness. He points out, on the other hand, that the condition may affect individuals whose musculature and bodily shape were originally normal, but whose abdominal wall has suffered a relaxation on account of pregnancy or some debilitating sickness. He divides visceroptosis into three groups, namely, visceroptosis without symptoms, visceroptosis giving rise to symptoms and visceroptosis associated with an organic lesion. He does not recommend operative treatment at all. Occasionally, however, surgical methods may be of value when the condition existing within the abdomen has been clearly revealed by careful examination. Though there has been some controversy on the point, there can be little doubt that ptosis of individual organs does occur; it is in the relief of such a condition that operation may be useful. Hemsley, writing in *The Journal of the College of Surgeons of Australasia* in July, 1930, claims good results from colopexy for the treatment of right-

sided visceroptosis, which he says is due to persistence of the embryonic mesentery of the ascending colon.

Possibly the most important feature of visceroptosis is its simulation of such conditions as appendicitis, gastric ulcer and cholecystitis. Great caution should be observed and all available diagnostic methods made use of before the conclusion is drawn that a person affected with visceroptosis is suffering from organic disease.

PARATHYROID TUMOUR AND BONE CHANGES.

It is known that the parathyroid glands are intimately bound up with the calcium metabolism of the body and that changes are often found in these glands in such conditions as osteomalacia, which are characterized by a withdrawal of calcium from the skeleton. When Erdheim examined the parathyroids of eight persons who died of osteomalacia in the puerperium, he found evidences of hyperplasia followed by atrophy and small cell infiltration. Tetany is known to occur in osteomalacia, and Erdheim suggested that the parathyroid hyperplasia in this condition may be due to an increased demand upon the glandular function by toxic products of changes in other organs. It is held by others that changes in the parathyroid, such as tumour formation, may be the primary condition. An interesting report of this nature has recently been published by I. Snapper, of Amsterdam, Holland.¹ The illness of Snapper's patient began as *osteitis fibrosa generalisata* and Snapper thought that the condition existed as an end stage of von Recklinghausen's disease. X ray examination revealed extensive osteomalacic changes in the bones. The spine, pelvis and femurs were "totally decalcified." The patient suffered from violent pain and had an ununited fracture of the right femur. The blood calcium content was greatly increased. A tumour of the parathyroid was suspected on account of a swelling of the thyroid. Operation was performed and a tumour was discovered. The blood calcium content fell at once. The patient began to improve and the fracture united. Manifestations of tetany occurred and parathyroid extract was given; later on the condition of the patient became stabilized and he made progress while taking four grammes of calcium lactate every day. Eventually the patient became cheerful, was free from pain and was able to walk. When the fracture had healed, the femur manifested a more compact structure. There are several important points to be noted in this report. In the first place it was the hypercalcaemia that led to a correct diagnosis. Secondly, the symptoms of tetany after operation are difficult of explanation; the remaining parathyroid glands may have been temporarily thrown out of action. Thirdly, in bone conditions of this nature the condition of the parathyroids should be carefully investigated.

¹ *Archives of Internal Medicine*, September, 1930.

Abstracts from Current Medical Literature.

OPHTHALMOLOGY.

Bacterium Granulosis Noguchi.

F. F. TANG (*National Medical Journal of China*, February, 1930) endeavoured to isolate the *Bacterium granulosis* from twenty-four persons suffering from trachoma. Noguchi's procedure was followed as closely as possible. The material for inoculating culture media was obtained from lids affected with trachoma by squeezing them with ring forceps. In only one instance was there obtained a motile Gram-negative bacillus culturally similar to that described by Noguchi. Subconjunctival injection into four rabbits and one rhesus monkey, however, produced no lesion comparable to trachoma. The animals were kept under observation for a period of seven months. Noguchi's work has not been confirmed by any other investigator. Lindner declared that the lesion produced experimentally by Noguchi was not trachoma. Failure successfully to repeat Noguchi's experiment in various parts of the world has raised the question as to whether the disease studied by him is identical with trachoma as seen elsewhere. Doubt in this regard appears to have been cleared up by Lindner who examined three of Noguchi's five patients and observed in them papillary hypertrophy, scar formation and inclusion bodies of Prowazek. Tang points out, however, that this does not rule out the possibility that the disease may be caused by a different infecting agent in the people studied by Noguchi.

Cyclic or Rhythmic Oculomotor Paralysis.

E. SELINGER (*Archives of Ophthalmology*, July, 1930) reports a case of rhythmic oculomotor paralysis; twenty-eight cases have previously been reported in the literature. The patient was a boy, sixteen years of age, with right-sided ptosis, bad sight in the right eye and right divergence from birth. His blood serum yielded a "++++" reaction to the Wassermann test. The left eye was normal. The behaviour of the right eye may be described in two stages. In the flaccid stage the upper lid drooped so that the palpebral fissure was reduced to three millimetres. The eye deviated outwards 40° to 45° , the pupil was dilated to a diameter of eight millimetres. This stage lasted for about twenty seconds and was followed by a spastic stage in which the outer half of the eyebrow moved up, the lid was elevated in a jerky manner to widen the fissure to eight to nine millimetres, the eye turned inwards to reduce the squint to 5° to 8° and the pupil contracted to a diameter of three millimetres. This stage lasted from fifteen to twenty seconds and was followed again by the flaccid stage. Of the

twenty-nine reported cases fifteen were congenital, eight occurred during the first year of life and six later. The condition is very rare. The lesion is probably nuclear.

Intraocular Inflammation in Glaucoma.

C. HAMBERGER (*American Journal of Ophthalmology*, October, 1930) maintains that as a rule the eye gets soft in ciliary inflammation. It is probably a mechanism of defence, otherwise every inflammation or injury would destroy the eye by glaucoma. Several cases are reported in this connexion. One patient suffering from severe glaucoma simplex was fortunate enough, in the author's opinion, to get iritis in both eyes. For three years her tension has been normal without miotics or "Glaucosan" or operation. Ciliary inflammation may be considered the softening principle in the treatment of glaucoma, whether it be the inflammation that invariably follows operation, or the hyperæmia with increased albumin in the anterior chamber that follows the use of miotics. "Glaucosan" acts similarly, the primary anaemia giving place to reactive hyperæmia with increased permeability of blood vessels, the most important symptoms of inflammation. Good technique does not guarantee success in all glaucoma operations and when the patient has only one eye an attempt should be made to provoke an inflammation (capable of being controlled and limited) by cauterizing the cornea near its border so that the tension is diminished. With local anaesthesia the upper nasal quadrant of the cornea is cauterized with the silver nitrate stick, neutralized immediately after with salt solution. Rosenstein gives preference to superficial cauterization at three or four different points near the upper corneal border. The author employs also "Glaucosan" drops when miotics prove useless in spite of the disadvantage that a rise of tension occurs occasionally. This rise of tension is treated by eserine and the injection of ten cubic centimetres of 10% sodium chloride solution into a vein of the arm. "Glaucosan" drops are useful in cases of iritis with increased tension.

Oculogyric Crises in Postencephalitis States.

A. E. BENNETT AND J. A. PATTORI (*Archives of Ophthalmology*, September, 1930) report seven cases of oculogyric crisis as residual encephalitic manifestations. The first patient, a man of twenty-four, complained of his eyes turning over: "If I look up, they stay that way; if I look down, they stay down." Six years previously he had an illness attended by delirium. For the last three years he had spells of sudden upwards or downwards conjugate movements of the eyes, recurring every few weeks in the afternoon and lasting till bedtime. He was worried and depressed. The eyes otherwise were normal. Amyl nitrite, hyoscine and stramonium were all

tried without much benefit. The other six histories were very similar. In six patients modified Parkinsonian residuals were present. The history of previous encephalitis was present in five instances, indefinite in two. Hyoscine or stramonium should be given; it often relieves the incapacity sufficiently to permit the patient's return to work.

Phlyctenulosis and Tuberculosis.

M. GOLDENBURG (*American Journal of Ophthalmology*, August, 1930) is convinced that phlyctenulosis is not a tuberculous disease nor is it benefited by tuberculin therapy. Treatment with atrophine gives good results and, when combined with minute doses of calomel, still better results. The author has discovered that many affected children favour the consumption of an excessive amount of carbohydrates, especially sweets, and he found by experiment that when the patients were cured and given a diet rich in sweets, the phlyctenulosis recurred. This did not happen when saccharine was substituted for sugar.

Iris-Inclusion in Glaucoma.

H. HERBERT (*British Journal of Ophthalmology*, September, 1930) advocates iris-inclusion as the best operation for many cases of chronic glaucoma, suggests certain precautions and adds a new point in technique. It is the best approach to the safe medium between excessive localized drainage with a conjunctival bleb and the liability to a recurrence of high tension. Miotics should be omitted the day before operation and a saline purge given. Adrenalin is instilled before operation. Previous to this there has been a douche of perchloride of mercury, one in three thousand, for two minutes and an interval of twenty to thirty minutes passes before the operation is started. The keratome is inserted into the conjunctiva six to seven millimetres above the limbus. "The iris is well gripped with forceps and pulled slowly towards the centre of the pupil, till it is seen to have been torn from its base locally." This is the new technique. It is then drawn up to be cut radially under the conjunctiva. Straight iris scissors are most suitable. Repeated snips are made and the effect is noted. The cuts should reach the pupillary border, if possible, and the iris is not released from the forceps until the cutting is completed.

LARYNGOLOGY AND OTOTOLOGY.

Intraoral Cancer and Its Treatment.

ALBERT SOILAND AND ORVILLE N. MELAND (*California and Western Medicine*, August, 1930) believe that susceptibility and irritation play a very decided part in the cause of cancer. They quote the statement that in a cancer hospital in London 93% of all the patients suffering from malignant disease of the tongue also

have syphilis. The authors themselves have observed that all neoplastic conditions associated with syphilis are exceedingly malignant and in the majority of these patients the neoplasm runs its course to a fatal termination despite the type of treatment instituted. When the lesion is ulcerating and is already sloughing and small portions of tissue are constantly being broken off, biopsy is accompanied by little danger of dissemination. On the other hand, there is always a potential danger of dissemination when the lesion is early. If a specimen is absolutely necessary, its removal by the method that Morgan has described is safe. This consists of using the high frequency undamped bipolar current. The specimen cutter is a loop of wire which cuts and seals; when it has reached the depth desired, it is pulled back and a piece of tissue sufficiently large for microscopical study is extracted. Methods of treatment of tongue cancer used in a number of clinics are tabulated. The technique followed by the authors is to clean up the mouth and eliminate all forms of sepsis. While this is being done radiation in the form of high voltage X ray or radium packs is given to the gland-bearing areas on each side of the neck. When the primary lesion is on the tongue it is attacked by circumvallation with implants of radon filtered through gold or platinum. Lesions in the cheek may be treated by implants, but surface radiation, by gamma rays, will clear up the majority. If this is insufficient, electrocoagulation is resorted to. For the treatment of carcinoma of the tonsils interstitial radiation, as used in the tongue, gives best results. In the treatment of sarcoma or the transitional type of carcinoma described by Quick and Ewing, surface radiation gives excellent results. Electrocoagulation offers the best chance when radiation fails. When one or two movable glands are palpable and when these have not disappeared after irradiation, it is the author's procedure to expose the affected glands and destroy them by coagulation *in situ* and then to apply a radium pack. On the other hand, if the glands are fixed, external irradiation alone is given and no attempts are made at surgical exposure. The authors conclude that intraoral malignant disease should always be given the benefit of radiation therapy. When the lesion is advanced irradiation is always a good palliative and in the treatment of the early lesion it gives results on a par with more radical procedures. Those patients who are suitable for operation and who have not shown sufficient response to irradiation should be treated by means of electrosurgery.

Surgical Diathermy in the Treatment of Nasal and Throat Lesions.

W. HESSE (*Deutsche Medizinische Wochenschrift*, August 29, 1930) considers that surgical diathermy is indicated for the treatment of nasal lupus and laryngeal tuberculosis.

Combined with a cutting operation it is useful in the eradication of small malignant growths of the larynx. Larger tumours are best treated by radical excision. In the treatment of tumours of the accessory sinuses it is indicated when complete surgical removal is impracticable and especially when there are deep extension and proximity to vital structures. He has not had much success in the treatment of laryngeal papillomata. The great value of surgical diathermy lies in its power of coagulating surrounding structures and in preventing the removal of much healthy tissue as well as preventing metastatic spread of malignant growths.

The Relation of Suppuration and Malignant Disease of the Nasal Sinuses.

A. J. WRIGHT (*The Journal of Laryngology and Otology*, August, 1930) is of the opinion that preexisting chronic infection is a factor in producing malignant disease of the nasal sinuses and states that a detailed history shows that the onset of the suppuration may antedate the onset of the new growth by many years. If this contention be accepted, it forms an additional reason for making every possible effort to cure the chronic suppuration. The author presents notes of a series of patients in several of whom the suppuration certainly, and in the remainder probably, antedated the malignancy.

Salivary Fistula Communicating with the External Auditory Meatus.

PETER H. ABERCROMBIE (*The Journal of Laryngology and Otology*, July, 1930) records a patient who complained of slight watery discharge from the left ear, occurring about once or twice a week, when he was eating; it had been noticed for the last seventeen years. The tympanic membrane was normal and the hearing perfect to the usual tests. There was no history of injury or any illness affecting his ear or parotid gland. Clear, watery fluid was seen to trickle down from a pin point opening on the anterior wall of the meatus. Pathologists reported that one of the salivary glands appeared to be the only possible source of the fluid. It is concluded that this was a case of congenital unobliterated branchial cleft communicating with the parotid gland.

Abscess of the Brain.

HEINRICH VON NEUMANN (*The Journal of Laryngology and Otology*, June, 1930) in an article on brain abscess draws attention to recent statistics of various clinics and compares them with those established by Macewen. The symptomatology is studied and the author stresses the importance of early exploratory puncture in suspected brain abscess. He is of the opinion that the prognosis of right-sided brain abscess is better than that of left-sided brain abscess, as it is not necessary to wait for the aphasia which is a late symptom. On

the contrary it is necessary to make a diagnosis on the basis of general symptoms and therefore to make an exploratory puncture much earlier than in left-sided abscess without aphasia. Thus, abscess on the right side, in spite of causing fewer symptoms, is likely to be operated upon earlier than abscess on the left side. Results of operations on cerebellar abscess are not so much influenced by early or late operation as by the kind of abscess and its pathological conditions. The treatment of abscess varies with each particular case and the author gives his experience with the method of drainage of Lemaitre which he found worked well during the first few days, but later failed in some of his cases, necessitating a return to his old method of stretching, packing or making a counter incision.

Nasal Sinus Disease in Small Children.

L. W. DEAN (*The Laryngoscope*, May, 1930) in a paper on nasal sinus disease in small children states that it is more important to know what prepares the tissues for infection than to know the infecting organism and that if it were not for the allergic states, nutritional disorders and endocrine disturbances, there would not be many cases of sinus disease. He refers to the work of Daniels who showed that every white rat fed on a diet deficient in vitamin A developed a sinus suppuration. The control rat, living under the same conditions, but with a normal diet, had unchanged sinuses. It was also shown that in the early stages of sinus disease the proper diet would control the sinus disturbance. As the nasal sinus disease became chronic, it could not be cured by diet. The author also states that there is no objection to operating on the allergic nose in children when there is suppurative sinusitis in addition to the allergic condition, but to operate for the allergic condition which will disappear with treatment, is not justifiable. To the author an eosinophilia of 10% or more in the nasal discharge indicates allergy, but the absence of eosinophile cells in the nasal discharge does not exclude the allergic nose. He thinks that allergy does interfere with ciliary action and cause stagnation in the sinuses with resulting infection. The infection, once firmly established, may indicate the need of an operation on the sinuses. He also mentions that the allergic nose is often benefited temporarily by any kind of a nasal operation, even by washing out the maxillary sinuses when the washings are perfectly clear. Asthma in children is often benefited by treating a nasal sinusitis. Chronic malnutrition in children is often associated with a chronic nasal sinus disease. The author recommends the use of 1% ephedrine during the acute stage of sinusitis. Operation on the nasal sinuses of children, other than meatal drainage of the maxillary sinuses, is very rarely indicated.

Special Articles on Diagnosis.

(Contributed by Request.)

XXIV.

MALIGNANT DISEASE OF THE UTERUS.

THE diagnosis of malignant disease of the uterus is based on consideration of the history, symptoms and physical signs. These vary according to whether the patient is in the age period before, during or after the menopause. They also vary according to whether the malignant condition affects the cervix or the body of the uterus. In all cases, at whatever age, however, the final diagnosis rests on the removal of a portion of the suspected tissue with an investigation and report by a competent pathologist. This is an essential step in the diagnosis of all forms of malignant disease.

History.

Suspicion of cancer should be raised if a patient complains of continuous discharge which occasionally becomes tinged with blood and gradually becomes continuously blood stained, particularly if the discharge is watery and becomes after a few weeks foul smelling.

Symptoms.

The main symptoms in the order of their appearance are discharge, bleeding, pain and disturbance of bowel and bladder functions.

The discharge, as indicated in the history, usually commences as a watery or yellowish discharge which is continuous from the beginning. After a few weeks the patient notices blood stains in the discharge at irregular intervals and particularly after any disturbance of the parts, such as coitus, syringing, or physical examination. A little later the blood appears continuously in the discharge. It is bright in appearance and is independent of menstruation. Menstruation is at first undisturbed, but gradually the menstrual period becomes prolonged, and in the later stages it is continuous from one month to another.

Bleeding is a cardinal symptom of malignant disease. Every patient who complains of irregular bleeding should be investigated with a view to excluding cancer. The old dictum: "All bleeding at or after the menopause is cancer until it is proved otherwise," is one of our most valuable safeguards. As the bleeding is due to the breaking down of the malignant tissue, it is, of course, bright and irregular, tending to become continuous, and always brought on by local disturbance.

Pain is a late symptom. It is most important. When it commences it is due in the majority of cases to infiltration of the surrounding tissues with involvement of the nerve trunk or other viscera. It is continuous and boring in character.

Disturbances of bowel and bladder functions are very late symptoms. They are due to invasion of the bladder and bowel. This invasion may lead to the formation of a fistula, with continuous loss of urine or faeces through the vagina.

Physical Signs.

The physical signs vary according as to whether the disease is invading the *cervix uteri* or the body of the uterus.

In Cancer of the Cervix.

There are three main types of malignant disease found clinically in the cervix. They are the fungating, ulcerative and infiltrating types.

In the fungating type the cervix becomes very much enlarged and the vagina becomes partially filled with a large cauliflower-like protrusion from the cervix which breaks down very easily and bleeds freely under the examining finger.

In the ulcerative or excavating type the cervix becomes hollowed out by an ulcer which is gradually eating into

its substance. The ulcer tends to spread over the cervix and into the surrounding vaginal wall. Its base is soft and friable. It breaks down easily under the examining finger and bleeds freely. There is always a raised, rounded margin to be felt around the ulcer.

In the infiltrating type the cervix is very much enlarged and in the early stages a massive enlargement with only slight bleeding is the outstanding characteristic. This type is uncommon as compared with the fungating and ulcerative types. It is not until the tissue breaks down with the formation of an ulcer, that bleeding and friability become outstanding features in the signs.

In Cancer of the Body of the Uterus.

The physical signs in cancer of the body of the uterus are distinct from those of cancer of the cervix. The uterus is found to be enlarged, usually out of proportion to the age of the patient if the condition occurs after the menopause. The uterus is hard, irregular and definitely enlarged. There is not usually any marked irregularity in its outline.

Age Groups.

The onset of cancer may be before, during or after the menopause, and the history and principal signs vary accordingly.

Before the Menopause.

The disease is not common before the fourth decade, although examples may be seen in the early thirties. The signs and symptoms are very rapid in onset in younger patients. The discharge is free, watery and foul-smelling, while bleeding, which may be caused by coitus, soon becomes continuous. The physical signs will vary according as to whether the condition is fungating or ulcerative in type. The discharge and bleeding are at first independent of the menstrual period. Before long the menstrual period tends to become prolonged. After several weeks or four or five months the menstrual period may become continuous. As patients with this condition very often regard bleeding as associated with disturbance of their menstruation, they frequently do not report for examination until the condition is fairly advanced. This is noticed particularly in younger patients.

At the Menopause.

It is generally recognized that at the normal menopause the menstrual function decreases gradually by a slight diminution each month until menstruation ceases. Any disturbance of this normal termination of menstruation should be looked on with suspicion. Every patient who bleeds excessively at the time of the menopause is a potential subject for the development of cancer and should be most carefully investigated by a thorough physical examination, followed up, if necessary, by a diagnostic curettage and taking of snippings from any area under suspicion. A history of discharge which is continuous and becoming foul smelling and blood tinged together with an excessive loss at the time of menstruation, is sufficient justification for a thorough examination. If on inspection the cervix appears to be roughened and irregular or bleeds easily on being touched with a sound, a snipping should be taken at once and submitted to a pathologist.

After the Menopause.

All bleeding after the menopause is extremely suggestive of malignant disease and should be thoroughly investigated. Here again the only sure basis on which a diagnosis rests is the removal of any suspected portion of the cervix for the purpose of microscopical examination. If the uterus is enlarged to a degree greater than one would expect for the age of the patient and there is bleeding, the uterus should be explored with a curette and all scrapings submitted for examination.

Unfortunately, even in these days of comparative enlightenment of the public by propaganda, many patients are seen at a late stage of the disease when the cervix is fixed by infiltration of the pelvic connective tissue and pain is a prominent symptom. In the later stages of the

disease, when infiltration and fixation are marked and bleeding is an outstanding feature, there are to be found the further symptoms of cachexia and loss of weight. These are due mainly to absorption from the infected malignant mass, together with the hæmorrhage which by this time is usually continuous and severe. The diagnosis in cases which have reached this stage is obvious. Our efforts should be centred on the early diagnosis before this stage is reached. This can be done only by a thorough and careful investigation (if necessary under an anæsthetic) of all patients who show the symptoms of discharge or bleeding together with any irregularity, hardness or ulceration of the cervix. Any opinions formed in the absence of a thorough pathological investigation can only be tentative. It must be clearly understood that there is no uniform picture of cancer of the cervix or body of the uterus. The diagnosis rests on a consideration of the facts presented by the history, symptoms and physical signs. It is only by a most thorough investigation by a careful physical examination that the diagnosis can be made sufficiently early to give the patient the best chance of cure.

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Medico-Legal.

THE NEW SOUTH WALES MEDICAL BOARD.

AN inquiry by the New South Wales Medical Board into alleged unprofessional conduct by Dr. Chisholm Ross was held in the Executive Council Chambers, Chief Secretary's Department, Sydney, on November 6, 7, 10, 12 and 19, 1930.

Dr. T. Storie Dixon, President, presided and with him were the following members of the Board: Dr. E. J. Jenkins, Dr. W. H. Crago, Dr. Murray Will, Dr. J. A. Dick, Dr. W. G. Armstrong.

Mr. Hardwick, instructed by the Crown Solicitor, appeared to assist the Board.

Mr. Cassidy, instructed by Messrs. Abbott and Allen, appeared on behalf of Dr. Chisholm Ross.

MR. HARDWICK: The information laid by Arthur Kench, of the Department of Public Health, alleges that:

About the 26th day of October, 1927, at Sydney in the State of New South Wales, Dr. Chisholm Ross, a person registered as a legally qualified medical practitioner, was guilty of infamous conduct in a professional respect in that he made to Mr. Johnson, a solicitor employed to prepare the will of one Gerald Massy a grossly unreliable report as to the mental condition of the said Gerald Massy and one that was not in accordance with the conditions that existed at the time such report was written. And in that he the said Dr. Chisholm Ross while setting himself up as a mental specialist had acted in the matter of the suit of Sands and Another *versus* Massy in a manner that rendered him a menace to the public and a disgrace to his profession. And the said Arthur Kench prays that the said New South Wales Medical Board may remove the said Dr. Chisholm Ross and his name from the Medical Register of New South Wales.

The information is brought in pursuance of Section 9 of the *Medical Practitioners' Act*, 1912, which says:

If it appears to the satisfaction of the Board that any person registered as a legally qualified medical practitioner . . . has been guilty of infamous conduct in any respect it shall be lawful for the Board to remove such person's name from the Register and thereupon he shall cease to be a legally qualified medical practitioner within the meaning of this Act.

I desire to draw the Board's attention to a definition of the phrase "infamous conduct in a professional respect" which was followed in a case which came before the Board some years ago, namely, *Clure versus* the Medical Board of New South Wales. It is reported in our own 34 Weekly Notes. The definition is as follows:

If it is shown that a medical man in the pursuit of his profession has done something which with regard to it that would be reasonably regarded as disgraceful or dishonourable by his professional brethren of good repute and competency then it is open to the Medical Board to say that he has been guilty of infamous conduct in a professional respect.

That passage is taken from the case of Allinson, 1894, 1 Q.B., page 750.

The particular facts which concern this Board's inquiry relate to a certificate that Dr. Chisholm Ross gave on the 26th October, 1927, concerning the condition of a man named Gerald Massy. That certificate is addressed to a firm of solicitors in Goulburn called Sendall and Johnson, who were Mrs. Massy's solicitors, and reads as follows:

225 Macquarie Street, Sydney.
26/10/27.

I was consulted by Mr. Gerald Massy at the instance I imagine of his Nurse Heath who is well and favourably known to me for a good many years with a view of gauging his mental condition. In this I sought the cooperation of Dr. A. W. Campbell who will write you separately.

My conclusion is that he is of testamentary capacity and I was unable to detect any undue influence on the part of the nurse, he being fully in charge of the position.

I may add that the nurse informed me that they had married by registry on the 25th instant.

Yours truly,

CHISHOLM ROSS.

There is one other matter I want to refer to, and that is this: The subject matter of this charge was in consequence of a passage in the judgement of Mr. Justice Davidson.

MR. CASSIDY: His remarks are, of course, the subject of appeal. It is the doctor's wish that the matter should be investigated because I have the right as his legal adviser to object to it as it is the subject of appeal, but I do not mind it being taken that the Judge's remarks are not final by any means.

MR. HARDWICK: His judgement in the will suit is not final. The passage that is important on this aspect appears as follows:

Dr. Chisholm Ross wrote a report to Mr. Johnson which is dated 26th October, 1927, and purports to be based on an examination of Mr. Massy the day before and a subsequent interview a day later. The doctor apparently with the intention of strengthening his report stated in it that he was called in by Nurse Heath who had been well and favourably known to him for many years. She herself says that her acquaintance with the doctor was limited to her meeting him about eight years earlier when she worked in his mental home at Lane Cove for a fortnight and spoke to him once or twice with reference to the condition of a patient. The doctor maintains that since that time he attended and prescribed for Nurse Heath and that she had written to him. At the outset it is difficult to account for this contradiction. The doctor also reported that Mr. Massy was of full testamentary capacity and quite free from any suggestion of undue influence as he was "in full charge of the position." In his evidence this opinion was elaborated with reasons, yet in cross-examination he was to say the least of it not prepared to deny that he had subsequently told the defendant's solicitor Mr. Meyer firstly that Mrs. Massy had informed him that she had taken a stand on the subject of the marriage in order to protect Mr. Massy from his brothers and to spite his relatives, and secondly that the case would have to be

settled as the plaintiff would have no chance on a charge of undue influence as he—Dr. Chisholm Ross—had examined Mr. Massy on the day of the wedding and found him non compos. He hesitated about admitting the reference to mentality in the conversation with Mr. Meyer, but his attitude convinced me that he had said it. When Mrs. Massy was asked in cross-examination whether she made the first of the abovementioned statements all she could reply was "Not to my knowledge." The doctor also added to his report the statement that Mrs. Massy had informed him that she had been married "by registry" as he described it. This was not a fact as the marriage took place in the vestry of the church and Mrs. Massy denied having said it, but admits that up to about midday on 25th October it was the intention of herself and Mr. Massy to be married before a registrar. Further than this Dr. Chisholm Ross maintained that he had lost the notes that he had made on the day of the examination, but he produced what he termed a precis to assist him in giving his evidence. The reason for making a precis is not convincing seeing that his notes were apparently written on a loose sheet of paper. Moreover the precis is headed with a date of the first interview with Mr. Massy as being the 24th October and not on the 25th of the month as he said in the witness box. Incidentally the doctor also said in evidence that after his examination of Mr. Massy he was in some doubt and asked for and procured the collaboration of Dr. A. W. Campbell. He added that he found Mr. Massy mentally tired. I can only say that when a person sets himself up as a mental specialist and acts as Dr. Chisholm Ross had done in this suit he is to my mind nothing less than a menace to the public and a disgrace to his profession.

PERCIVAL JAMES MEYER of Goulburn, solicitor, gave evidence that he was solicitor for the Defendant in the suit of *Sands versus Massy*. On the 8th August, 1929, he called on Dr. Chisholm Ross at his rooms and had a conversation with him in the course of which the doctor said in regard to Mr. Massy's will: "It will never stand, Percy, he was not compos when I saw him." Subsequently he saw Dr. Ross's certificate of October 26, 1927.

MR. HARDWICK: You tell us what happened then? A.: I went to the doctor's rooms, and when I saw him I said to him: "Doctor, the last time I saw you you told me that Gerald Massy's will would not stand and that he was not compos when you saw him; Johnson has now shown me a certificate in which you say that he is of testamentary capacity." He said "I do not think that I told you that it would not stand, did I?" In fairness to the doctor, I am not absolutely certain whether the doctor said "Did I," but my impression is that he did, but I am not certain about it. He said one of those two, whether in the way I put it, or putting it with the words "Did I." I said "Yes you did," and he said "Well, Dr. Campbell who was called in to see Gerald Massy as well as I and who went to school with him told me that he had quite a good recollection of the old days although he was very weak physically," or "very feeble physically," something like that. He said "In my opinion you could not set the will aside that he was not able to make it, but I do not think you could lose on the question of undue influence." He said "I have told both the nurse and Johnson that they should settle the matter and I cannot understand why they are not prepared to do so; I have warned Johnson of what my evidence will be in case he calls me as a witness." He said "Johnson told me that he did not think the other side would prove undue influence, but I told him that I thought it was essentially a case of undue influence." He said "The position is summed up in one word, propinquity." He said "Here is a man who has been weakened by illness over a long period of years and associated with him each day and every day is a woman who has been a mental nurse; she has passed her youth and has only comparative education." I think the doctor said "charm," or some word of that sort, I do not suggest the exact word, "she sees ahead of her a life of drudgery and she knows that this man is possessed of very considerable means and that if she plays her cards properly she will get all that he has, will not have to work again,

and be in a position of affluence." He said "What is it natural for her to do, what does human nature suggest?" He said "For that reason I think that it is essentially a case of undue influence." I said "There is one question doctor, that I want to ask you, if a man has been torn by illness for many years and during that time undue influence has been exerted upon him could he make his will and give the witnesses the impression that he thoroughly understood what he was doing, when in fact he was not able to understand the duty of making provision for others which he would have understood if he had been in good health and the influence had not operated?" The doctor said "Yes, he could." To the best of my recollection I think that is all that took place.

The evidence of John Dunbar, police constable, was read and the Crown case closed.

ALFRED WALTER CAMPBELL, of Sydney, neurologist, gave evidence that on 25th October, 1927, he examined Gerald Massy and wrote a report.

MR. CASSIDY: Will you have a look at your report, that is Ex. 5; would you read that? A.: "Macquarie Chambers, 183 Macquarie Street, Sydney, October 29, 1927. Dear Sir: This is to inform you that on the 25th instant at the request of Dr. Chisholm Ross I examined Mr. Gerald Massy of Gundaroo re testamentary capacity, and my conclusion was that while his mind had been weakened by his paralytic stroke it was not weakened in such measure as to preclude testamentary capacity. In particular I was satisfied that he clearly remembered all his relations. It so happens that I myself knew several of them; and he had adequate knowledge of his possessions. Mr. Massy's statements to me were confirmed by subsequent conversation I had with Mr. Affleck, his bookkeeper, and that he was free from insane delusions. Lastly, referring to the difficult question relating to undue influence, I think he must be passed because he has not taken to wife the only person who may be accused of operating upon him. Yours faithfully, A. W. Campbell. P.A.: I may mention that I was unaware at the time I examined him of his contemplated marriage; now that this is an accomplished fact it does not alter my opinion that when I saw him he was testamentarily capable. To Mr. Johnson, solicitor, Goulburn."

Q.: Was that opinion and that conclusion come to quite uninfluenced; was that your own independent conclusion and uninfluenced by any opinion of Dr. Chisholm Ross? A.: Yes.

CHARLES ALFRED HOGG, Inspector General of Mental Hospitals, gave evidence that he had read or heard the evidence of Dr. Barbour, Dr. Campbell and Dr. Ross and that on consideration of that evidence he was of the opinion that Gerald Massy had testamentary capacity and that the tests given him by Dr. Campbell were sufficient.

WILLIAM MACKAY BARBOUR, of Gunning, medical practitioner, gave evidence that he had attended Gerald Massy from January, 1926, until 28th February, 1929, and had seen him on a number of occasions during that time. He was present on the 4th of November, 1927, when Gerald Massy made his will.

MR. CASSIDY: Did you see any sign or indication in Mr. Massy himself that he was prone to accept suggestions made to him by others? A.: No.

Q.: And was your opinion of his mental condition that he was quite clear mentally, and capable of exercising his own will and judgement? A.: Yes.

Q.: By the way, your opinion on the 4th November, 1927, when he made that will, was in no way influenced by anything that Dr. Chisholm Ross or Dr. Campbell said? A.: At that time I was not aware of the fact that he had been seen by either Dr. Chisholm Ross or by Dr. Campbell.

ERNEST WILLIAM JOHNSON, of Goulburn, solicitor, gave evidence that he saw Gerald Massy at various times from 1924 until about March, 1928.

MR. CASSIDY: During the whole of that time, from your discussions with him and the business you transacted with him, did he ever show any sign of lack of testamentary capacity? A.: No.

Q.: Did he ever in your opinion show signs of mental failure? A.: No.

Q.: Do you remember early in 1927 seeing him in regard to a will? A.: In February, 1927, I think it was.

Q.: Was he perfectly sound mentally then? A.: As far as I could tell he was.

Q.: What was the next occasion in 1927 you saw him? A.: I did not see him again until about October of 1927.

Q.: What was the matter in hand then? A.: He came in to see me about two matters; one was a sale transaction, the other one in connexion with a further alteration which he wished to make in regard to his will.

Q.: What was his condition then in your opinion? A.: He seemed to me to be quite all right.

Q.: No sign of mental failure? A.: No.

The witness saw Mr. Massy again on the 4th November and was present when he made his will.

MR. CASSIDY: Did he seem to have a thorough appreciation of what he was doing? A.: I felt perfectly certain he did.

Q.: In your opinion, so far as you could judge, and I suppose you had every opportunity, was he perfectly capable of making a will on the day he did? A.: I have no doubt about it at all myself.

The witness again saw Mr. Massy about March, 1928, when there was a discussion about business matters.

MR. CASSIDY: Anything wrong that you could see? A.: He seemed to me absolutely perfectly intelligent; of course, physically I always did consider him a very sick man from the time I saw him in 1924 right along.

Q.: And at that time with the opinions of Dr. Ross and Dr. Campbell, did you need them to reinforce you as to his mental capacity? A.: If I had not had Dr. Chisholm Ross's letters I do not think it would have made any difference; I would have still taken instructions to make his will, and I would have allowed him to make it.

CHISHOLM ROSS, sworn and examined.

MR. CASSIDY: You are a legally qualified medical practitioner? A.: Yes.

Q.: You are a Bachelor of Medicine of Edinburgh of 1883, and Doctor of Medicine of Sydney in 1886, and you have been upwards of twenty years a lecturer of psychological medicine in the University of Sydney? A.: Yes.

Q.: You have been in the Lunacy Service for twenty years holding responsible positions at Gladesville, Newcastle, Newcastle Port Health Office, Kenmore and Callan Park? A.: Yes.

Q.: You have been medical superintendent of all those hospitals with the exception of Gladesville? A.: Yes.

Q.: You are practising now as a specialist in mental and nervous diseases? A.: Yes.

Q.: You have been occupying a position at the Reception House for something like twenty years? A.: Yes.

Q.: During the whole of your career has there been a charge of any kind or any nature in connexion with your professional career levelled against you? A.: No.

Q.: Your career in Sydney extends over a period of something like forty years? A.: Forty-seven years.

Q.: You were first called into consultation in regard to Mr. Massy in October, 1927? A.: Yes.

Q.: Who saw you? A.: Mrs. Massy.

Q.: Where did she see you? A.: My rooms.

Q.: Had you known Mrs. Massy before? A.: Yes.

Q.: Over what period had you known her? A.: A good many years; I cannot tell you.

Q.: Where had you first of all known her? A.: I knew of her at Lane Cove House Private Hospital.

Q.: What was she there? A.: I think she was a nurse; matron appointed the nurses.

Q.: Had you occasion to see her fairly regularly up to the time you saw her in 1927? A.: Yes, she was a patient of mine.

Q.: Could you tell us roughly how often you saw her? A.: I saw her, she came for work sometimes and I am not sure whether I got her any or not; later on she was up at Gundaroo and she used to come occasionally to see me about herself.

Q.: Had you had some information with regard to her from some other doctor; had you heard something with regard to her? A.: I do not remember.

Q.: Do you remember her in 1927 coming to your rooms to see you? A.: Yes.

Q.: What did she say to you? A.: She said she wanted me to see Mr. Massy.

Q.: Did she tell you where he was? A.: Hotel Arcadia.

Q.: Did you go down and see him? A.: I saw him in the morning about 10 o'clock.

Q.: Did you make any examination of him? A.: Yes.

Q.: How long do you think you were there? A.: Possibly three-quarters of an hour.

Q.: Did you talk to him? A.: Yes, I talked to him.

Q.: What was the object of your visit? A.: I think as to his mental condition; that was the suggestion.

Q.: Did you go through the usual tests, and have the usual amount of conversation? A.: Yes, I talked over everything that I thought would lead to what I wanted to find.

Q.: Is it your experience that in these matters by personal contact and personal association with the man you are talking to you are able to form conclusions? A.: Yes, with my experience I think I am.

Q.: Was your talk with him or your observation with him impeded in any way? A.: No, there was no one within earshot of the room.

Q.: You saw him alone? A.: Yes, and I saw no one was within earshot.

Q.: Did he appear to you to have a grasp of ordinary affairs? A.: Yes.

Q.: Suffering from any delusions? A.: None whatever.

Q.: Did you see him again? A.: I am not sure; I thought I did, I did not find it in my journal.

Q.: I suppose you have a good deal of work to do, and this is one matter in a thousand? A.: At that time yes.

Q.: And when you were giving your evidence at the trial you were speaking of matters that had occurred two and a half to nearly three years previously? A.: Yes.

Q.: Do you remember giving a certificate? A.: Yes.

Q.: Is this the certificate you gave (handing document to witness)? A.: Yes.

Q.: This certificate states: "I was consulted by Mr. Gerald Massy at the instance of Nurse Heath, who was well and favourably known to me for a good many years, with a view to gauging his mental condition. In this I sought the cooperation of Dr. A. W. Campbell, who will report to you separately. My conclusion is that he is of testamentary capacity, and I was unable to detect any undue influence on the part of the nurse, he being fully in charge of the position?" A.: That is right.

Q.: "I may add that the nurse informed me that they had been married by registry on the 25th instant?" A.: Yes.

Q.: You are charged here that that certificate is grossly unreliable and not in accordance with the conditions as you found them; what do you say? A.: They are in terms of the conditions as I found them.

Q.: That is a true and correct certificate? A.: Absolutely.

Q.: Had you ever any interest in this case other than the ordinary professional interest? A.: None whatever.

Q.: Was the only fee you ever received in connexion with it the fee in connexion with this certificate? A.: The only money was in connexion with that.

Q.: Were you trying to serve any ulterior purpose in giving a false certificate? A.: I was not interested except in my work.

Q.: Did you hear anything more of Mr. Massy from that time up till the middle of 1929? A.: No, I do not think I did; perhaps I did from Dr. Campbell, but that was quite early after we saw him.

Q.: Did you influence Dr. Campbell in any way by your conclusion? A.: None whatever.

Q.: So if you are both wrong, you are both wrong independently? A.: Quite, yes.

Q.: And the policeman is right. Now let us get to the next thing. Do you remember in August, 1929, after Massy's death receiving a visit from Mr. Meyer, the Massys' solicitor? A.: I do.

Q.: Had you known Meyer previously? A.: Yes, from early boyhood.

Q.: Do you remember how the conversation started when he came to see you? A.: I told him I did not think I could talk to him because I had been approached by the other side, and he said "Oh well, we will have a little friendly chat." In other words, he gave me the impression it did not matter, it was only a quiet talk; I was misled to that extent.

Q.: You may remember that Mr. Meyer says in his evidence that to the best of his recollection this did not take place, that you said "Well, Percy, I do not know how I stand in the matter, Johnson has got a certificate from me." Are you clear something to that effect took place? A.: Absolutely I am clear about it.

Q.: Just tell us what else was said? A.: He talked about the case, and then we got on to other subjects.

Q.: Was there a suggestion he was going to call you as a witness or subpoena you? A.: Not the slightest.

Q.: Was there any shorthand writer present on that occasion? A.: No, there was not, although there was put up to me at the trial wrongly, that he, Mr. Meyer, took notes, except very short ones; I do not think he took half a dozen notes while he was there.

Q.: Did he ever write to you about the interview at any time shortly after? A.: Not for some time.

Q.: Did you say to Mr. Meyer on that day: "It will never stand, Percy, he was not compos when I saw him"? A.: I did not.

Q.: Do you remember being cross-examined by Mr. Windeyer with regard to that? A.: Yes, very well.

Q.: What were the circumstances? A.: He asked me six or seven times the same thing in different ways, and I objected to it.

Q.: A mild cross-examination? A.: No, a brutal one I took it to be.

Q.: And I think you said you objected to it about six times? A.: Six times I think I objected to it.

Q.: Did he persist in it? A.: He persisted in it.

Q.: On the first occasion Mr. Windeyer said this to you "Did you say it will never stand, Percy, because when I saw him he was not compos," and did you say "yes, I doubt that very much, that is one of the things I objected to in that report." Then at page 2268 we come back to it a little later: "Did he say, when I saw you before you told me Gerald Massy's will would not stand because he was not compos," and did you say "that is what I object to." Then again on page 2268: "Did you say at the same interview, I do not think I went quite so far when I first saw you as to say he was not compos" and did you say "I said before that that is not right." Then again you were asked "Did you say that at the second interview, 'I do not think I went quite so far when I first saw you as to say he was not compos,' and did you say 'I said before I objected to that.'" Then you were asked "Never mind what you said before," and you said "I say he was compos." Do you remember giving those answers? A.: Yes.

Q.: Do you remember it being put once more, "At the second interview did you say to Mr. Meyer, I do not think I went so far in the previous interview as to say he was not compos," and did you say "I do not know that, I am not sure." Do you remember a second interview with Mr. Meyer somewhere about November, 1929? A.: Some time later, yes.

Q.: Did you say to Mr. Meyer on that occasion these words: "In my opinion you could not set the will aside on the ground that he was not able to make it, but I do not think you could lose on the question of undue influence"? A.: The last part certainly not; I deny the last part altogether.

Q.: On that occasion was the conversation still friendly? A.: Quite, even then I did not suspect anything.

Q.: Do you remember something being said about a settlement then? A.: Yes, I spoke to both the lawyers about a settlement.

Q.: Just tell the Board what you said. A.: I said that it only means a lot of expense and trouble or something of that sort, and as I said to the other lawyer, it is no use washing dirty linen in Court.

Q.: Do you remember whether you used the words "undue influence" at any time? A.: Yes, I did.

Q.: Just tell the Board your recollection of what you said in regard to that? A.: I said that that is always a factor in these cases, and that it would probably be exercised.

Q.: That is your experience, that the fight ranges round "undue influence"? A.: Yes, and I wanted to be the peacemaker.

Q.: Do you remember Mr. Meyer giving his evidence? A.: Yes, I remember that.

Q.: Do you remember him saying to you: "I said there is one question, Doctor, that I want to ask you; if a man has been . . . and the influence had not operated"? A.: Yes, it was something like that, but I did not think it was such a long speech as that.

Q.: Was Mr. Meyer putting up these hypothetical cases to you? A.: Yes, all the time.

Q.: And I think he said "Your answer to that was 'Yes, he could'"? A.: Yes, that is so.

Q.: And I suppose if you did assume those facts a man could? A.: Yes, that is quite right.

Q.: Did you ever receive a subpoena from Mr. Meyer? A.: No, but I think he offered one.

Q.: I do not think you were called by Mr. Meyer? A.: Yes.

Q.: Sitting in Court here as you have heard this inquiry proceed, is there anything in the evidence of Mr. Dunbar or any of the other witnesses that you have heard, Mr. Meyer or Mr. Johnson or the medical evidence of Dr. Barbour to alter your opinion from that which you gave in the certificate? A.: No.

Q.: I think this is so—"Testamentary capacity" can exist in people who are even of unsound mind? A.: More than that, when people are certified as insane.

Q.: The test of testamentary capacity is a sound and disposing mind? A.: Yes, that is so.

Q.: That is knowledge and appreciation of a person's possessions, and the claims of other people upon them? A.: Yes.

Q.: In this case had this physical enfeeblement acted in such a way in your opinion as to destroy this man's mental capacity? A.: No.

Q.: Are there any other matters that you would like to bring before the Board in regard to that examination? I have cut the matter rather short, but are there any other matters you would like to deal with or any other observations you made at the time, or any other facts? A.: No, I think that is the gist of it.

Cross-Examination.—MR. HARDWICK: You heard me in this inquiry quite early read out a copy of the evidence which you gave in the will suit? A.: Yes, that is so.

Q.: You do not want to question any part of that which was read out, that is the accuracy of it? A.: I questioned some of it just now.

Q.: You do not wish to question the accuracy of the evidence that was read out, which your counsel admitted was a copy of the evidence you gave in the will suit that has been referred to. What I mean is that you do not desire to say that any of that is not a correct statement of what you said at the time? A.: I do not remember now. Will you let me know to what you are referring?

Q.: It was read out here when the inquiry was opened? A.: What particular thing do you want.

Q.: I am speaking of the whole lot of it—you heard it read? A.: I do not remember now.

Q.: Surely you can tell the Board what I am asking you. Your counsel has not asked you to correct anything? A.: I take it that it is correct if my counsel agrees.

Q.: One of the questions which Mr. Windeyer put to you in cross-examination is at page 2270 of the evidence, and it was this: "Did you say this, Dr. Campbell saw him as well"—that is about that interview with Mr. Meyer—"as I, and he told me he went to school with Gerald, and he talked over old days with him; he found his memory was rather good." Do you remember what your answer was to that? A.: No, I do not.

Q.: Your answer was "Yes, Campbell told me so"? A.: Yes.

Q.: Then Mr. Windeyer asked you: "Did you go on 'I do not think you can set aside this will on the ground that he was unable to make it, but in my opinion you cannot lose on the question of undue influence,'" and your answer to that was "Not expressed as strongly as that." Do you remember that? A.: Yes, I should have said no.

Q.: What you meant when you said—first of all would you mind telling the Board when you said "Not expressed as strongly as that" what you meant? A.: Because it was always a factor.

Q.: The specific matter that was put to you was that you had said that in your opinion "You cannot lose on the question of undue influence," and your answer was "Not expressed as strongly as that." Did you not say something about there being undue influence? A.: At what time?

Q.: At the time you examined him. At the time you examined Mr. Massy did you not form the opinion that there was undue influence operating? A.: In my report I said no.

Q.: But you remember the document, Exhibit 11? A.: Yes, I remember that, but that is subsequent.

Q.: Would you mind looking at that document, which I now hand you? A.: I have seen it already.

Q.: I should like to draw your attention to one passage. On the 16th July, 1930, in that letter which you wrote to Mr. Johnson, you said: "Having considered the whole of the circumstances I was of the opinion that although there was a suggestion of possible undue influence coupled with propinquity his testamentary capacity was sufficiently good." In your certificate did you mention — A.: What is the date of that?

Q.: Twenty-sixth October, 1927. A.: Yes, that is so.

Q.: I should like you now to look at Exhibit 4 that I am handing you, and to have a look at the passage on undue influence in that exhibit and in Exhibit 11. In one it is stated "There was a suggestion of possible undue influence coupled with propinquity," and in the other you say "I am unable to detect any undue influence on the part of the nurse, he being fully in charge of the position?" A.: That was true when I wrote it.

Q.: Is there any difference between the two certificates? A.: Yes, there is an alteration, perhaps after two or three years I was not quite sure.

Q.: Do you not think that it is a material alteration? A.: No, I don't think so.

MR. CASSIDY: Read it, Mr. Hardwick.

MR. HARDWICK: Q.: You do not think it is? A.: No.

Q.: You do not think there is any difference at all? A.: I think a person might well change his mind in that time.

Q.: You not only said that you could not detect any undue influence, that is to say, in your certificate, on the part of the nurse, but you strengthened it by saying that he was fully in charge of the position? A.: So he was.

Q.: Did that convey that he was quite in control of the situation? A.: It says here what it was.

Q.: And now you say in the other one—as a matter of fact you had never seen him? A.: No.

Q.: You had seen Dr. Campbell's notes? A.: Yes.

Q.: Which were much more detailed than yours? A.: Yes.

Q.: And you say that you were of the opinion that there was a suggestion of undue influence coupled with propinquity? A.: Yes, after two and a half years.

Q.: Do you think that the time has anything to do with the matter. A.: Yes, a great deal; the element of time is a very great factor to my mind.

Q.: The last one, Exhibit 11, that I ask you about is a statement that you were giving Mr. Johnson, and which you were prepared to give at the Court? A.: Yes, in the light of subsequent events, in the light of the passage of years.

Q.: What had happened? A.: Only things that I had heard.

Q.: But when you gave that certificate, that document that is marked 11 on the 16th July, 1930, you were purporting to give the result of your examination on the 26th October, 1927? A.: I do not quite understand and would be glad if you would make it clear.

Q.: When you wrote that letter to Mr. Johnson on the 16th July, 1930, that is the one in your left hand? A.: Yes.

Q.: You were then purporting to tell Mr. Johnson the result of your examination of Mr. Massy on the 26th October, 1927? A.: That is an interpolation that should not have been there. I do not know why I wrote it.

Q.: But is not that what you were purporting to tell him? A.: I told him that in the light of subsequent knowledge I added that; it may have been knowledge or may not have been, but it was something that I had heard.

Q.: Read the beginning of it? A.: I have read it.

Q.: It states: "I have seen Dr. A. W. Campbell's notes, a copy of which I understand you have, and am in agreement with the main—although he elicited information from outside which was not given me." That was on the 26th October, 1927? A.: I suppose so.

Q.: It goes on: "The facts I elicited during my examination." That was on the 26th October, 1927? A.: 25th, I think.

Q.: Your certificate is dated the 26th? A.: Very well.

Q.: It goes on "Where it is clear that the testator although somewhat weakened in mind . . . of his obligation." Do you tell the Board that that has nothing to do with any other examination than the one that you made on the man? A.: Up to the first part, that is practically the same.

Q.: Then why put about undue influence? A.: Because I had heard of it.

Q.: You had heard about it? A.: I had heard it talked about.

Q.: Were you not purporting to tell Mr. Johnson the result of your examination on the 26th October? A.: That is two and a half years later.

Q.: Were you not purporting to tell Mr. Johnson the result of your examination of the 26th October? A.: I had done that in the previous one.

Q.: What information had you got? A.: Things one hears.

Q.: You had known Mr. Meyer, of Goulburn, for many years? A.: Yes, that is so.

Q.: And he spoke about your kindnesses to him and his father? A.: That has nothing to do with it. Yes.

Q.: I do not know whether you intended to convey this to the Board, but you suggested that Mr. Meyer, you understood, was only having a friendly chat, and by that friendly chat you did not think he was ever going to use the material that passed between you? A.: That is so; I do insist upon conveying that.

Q.: As a matter of fact do you remember that on the 6th August, 1929, he wrote you a letter from Goulburn telling you that he wanted to have a chat with you over your interview with Gerald Massy whom you were called in to see at the Arcadia Hotel on the 25th October, 1927. Do you remember that letter? A.: There was a letter of that kind.

Q.: Then he said: "I understand that you were rung up by Mr. Massy's nurse and that you went down to see him at the hotel. The old chap is dead now and there is trouble over his will, so can you see me next Monday, or if Monday is unsuitable say Tuesday, when I have to see Sir Jarvie Hood, and if you will kindly ask your secretary . . . will not be given for some time." Do you remember that? A.: Yes.

Q.: After you got that letter Mr. Meyer rang you up on the 'phone? A.: He may have.

Q.: And he asked permission for an appointment? A.: He may have done so.

Q.: Don't you remember it? A.: He came at any rate.

Q.: When he rang up for the appointment you knew he was coming to see you about finding out what had transpired when you examined Mr. Massy? A.: Yes.

Q.: You say that you said that you had already given a certificate to the other side? A.: I said I was on the other side.

Q.: On the other side? A.: That I had been approached by Mr. Johnson or something of that sort.

Q.: As a matter of fact did you advise Mrs. Massy as well as Mr. Johnson to make a settlement of the case? A.: I spoke to her about it.

Q.: Did you say this, that you warned them what your evidence would be? A.: No, as a matter of fact I do not think I used the word "warned." I told them.

Q.: Did you tell Mr. Meyer that you warned them what your evidence would be? A.: I suppose I did, but I do not remember.

Q.: Unless you told Mrs. Massy and Mr. Johnson that they could not succeed on a charge of undue influence, why would you want to warn them to settle the case? A.: It was a question of the expense; I had nothing to do with the details.

Q.: Do you think you warned them on the question of expense? A.: I told them about all these things.

Q.: Was that on the basis of expense? A.: Yes, generally it is.

Q.: I suppose you will admit that if your certificate was right, that he had full testamentary capacity, that you could not detect any undue influence on the part of the nurse, he being fully in charge of the position, there would be no occasion . . .

MR. CASSIDY: That was three years ago.

MR. HARDWICK: I did not interrupt my friend in his examination, and I do not think he should interrupt me.

MR. CASSIDY: My friend ought to be fair.

MR. HARDWICK: I ask the Board whether I have done my duty fairly. I submit that these remarks from Mr. Cassidy are uncalled for and improper. I have not been rude to Mr. Cassidy.

MR. CASSIDY: My friend has been unfair all through.

PRESIDENT: Mr. Cassidy can make any remarks he desires after Mr. Hardwick has concluded.

WITNESS: I say are there no other law suits with regard to testamentary capacity.

MR. HARDWICK: Q.: All I am saying is that if your certificate is correct of the 26th October, 1927, there would be no reason for the woman to settle the case because she was perfectly entitled to what the will gave her? A.: No, I do not know what you mean by that, and I want to know what you mean.

Q.: You do not know what I mean when I put the question that if your certificate of the 26th October, 1927, was correct, there would not be any reason for her to settle the case . . . you say that you do not understand that question? A.: Yes, I understand it, but that does not prevent a law suit being instituted. That is what was in my mind, and nothing else.

Q.: And you say that it had no reference at all to the fact of your giving the certificate on the 26th October, 1927, and having given the statement to Mr. Meyer? A.: No.

Q.: All those questions that you admitted to Mr. Windeyer? A.: I did not admit them.

Q.: You did not admit anything? A.: All that you said there.

Q.: I am only referring to what you have admitted? A.: Very well.

MR. CASSIDY: Q.: You were asked if you gave a certificate on the 26th October, 1927, and if it were right, would there still be any need to settle? Have you found that any law court exists where a doctor's certificate stops a will case? A.: No.

Q.: Have you found that three of them stop a will case? A.: No.

Q.: Did you say to Mr. Meyer that this lady told you she was marrying Mr. Massy in spite of his relations? A.: No.

Q.: Or to spite his relations? A.: No. I do not know what she said actually, but she said nothing about spitting his relations. She said that she did not like his brother, but there was no venom in it at all.

After counsel had concluded their addresses the Board announced that it would deliver its judgement a week later, on the 19th November. On that date the Board after reading out the information to Dr. Chisholm Ross declared that the Board had decided that the charges had not been proved.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the British Medical Association Building, Adelaide Street, Brisbane, on October 3, 1930, Dr. S. F. McDONALD, the President, in the chair.¹

Gynaecological Practice and Radium.

DR. KENNETH WILSON read a paper entitled: "Gynaecological Notes, with Particular Reference to the Use of Radium" (see page 786 in the issue of December 13, 1930).

DR. A. H. MARKS thanked Dr. Wilson for his paper. He was particularly interested in it because of its references to cancer of the cervix, which was fairly common. Dr. Marks had performed the operation of panhysterectomy in a number of instances; six or seven of these patients had survived over a period of five years. In the last two months he had heard of two of these patients; one had died of secondary growths, the other was reported as having a large pelvic tumour, which was probably a secondary growth. The five years period did not seem to be long enough.

In regard to the operation of panhysterectomy, there were two points to be considered: First, the recovery of the patient; second, the morbidity if she did not recover. In the hands of expert operators the results were better, but when one dealt with a small number of patients it was difficult to get one's technique up to standard. If the statistics of the results of radium treatment were correct, it would appear to be a better procedure than panhysterectomy.

DR. F. W. LUKIN thanked Dr. Wilson for his very interesting paper. He would like to ask one question. In reference to the radiation of the glands, mentioned particularly in regard to carcinoma of the vulva before extirpation by surgery, did radiation, by causing fibrosis, make the removal of the glands difficult. Also when the uterus was treated by radium for carcinoma of the body and it was subsequently decided to do a hysterectomy, was there any great difficulty on account of the fibrosis produced by the radium?

DR. H. McLELLAND thanked Dr. Wilson for his paper and for the trouble taken in bringing to their notice his impressions of the best work done on the subject. Dr. McLelland had been associated with the Radium Clinic at the Brisbane Hospital for about twenty-one months. The technique used for the treatment of cancer of the cervix was similar in a general way to that described by Dr. Wilson. As less than two years had elapsed, it was impossible to speak of results. The evidences of malignancy disappeared in the great majority of instances. Immediate results had been gratifying. The clinic had been set under way by Dr. Burrows and his technique had been adhered to as far as possible. This consisted of the insertion of radium tubes into the uterus and vagina and needles into the broad ligaments. The total maximum dose was about 9,000 milligramme-hours and this was rather more than the total dose given as a rule by Heyman or Regaud. He had been compelled to depart from this method on occasions, according to what radium was available. He could see that this was unfortunate, for only by adhering closely to one technique for a long time could one produce results of scientific value. It would take seven years to get the results of the treatment of the patients presenting themselves in the first two years of the clinic.

DR. M. GRAHAM SUTTON thanked Dr. Wilson for his very fine exposition of methods used overseas. When X radiation of malignant tumours was first started there were two groups: (i) Those amenable to soft rays and (ii) those amenable to hard rays—radiosensitive and radio-resistant. There were three factors influencing this: First, the anatomical site and the vascularity of the tumour and the surrounding tissues; secondly, the histo-

¹ The report of this meeting was inadvertently omitted from last week's issue.—EDITOR.

logical malignant order of the tumour; and thirdly, the clinical stage it had reached. He asked whether Regaud or any other authorities had made any alteration in dosage following on their biopsy, which was a necessary part of the technique in all correct treatment. The technique that appealed to him was the one based on the assumption that radium acted only on a very limited distance from its source. One could only therefore expect five to seven year results in tumours treated when the three factors mentioned were in a favourable stage. Judging from this assumption, the technique of Donaldson, in using tubes along the iliac vessels and in the glands, appeared best. Was the morbidity after use of eight to a hundred milligrammes of radium in the vagina, whether for *metropathia hæmorrhagica* or malignant disease, so much less than in an operation, well performed by a competent surgeon? In *The Journal of Obstetrics and Gynaecology of the British Empire*, Spring Number, 1930, Asherson had reported vaginitis and narrowing of the vaginal lumen, atrophy of the *portio vaginalis et cetera*.

He asked Dr. Wilson whether, in his studies abroad, he had had an opportunity to observe these effects. He wondered what trouble occurred in the sigmoid portion of the bowel later, and felt that patients were fairly miserable for several months after radium treatment.

Dr. E. S. MEYERS thanked Dr. Wilson for his paper. There were several points he wished to be enlightened on. First, he had understood Dr. Wilson to say that in regard to radio-resistance and adenocarcinoma, Heyman considered this was merely dependent on the proximity of the radium. Dr. Meyers then referred to Donaldson's technique, in which the pelvis was surrounded with needles. Had Dr. Wilson on any occasion seen patients in whom the abdomen had been opened again? It would not be an easy matter to remove the needles with the intestines round them and omentum over them. Also Dr. Meyers was under the impression that Regaud favoured distance radiation in distinction to interstitial application of radium. There seemed to be one general principle—that the maximum range for one milligramme of radium was one centimetre. This was laid down by Regaud, and Dr. Meyers had followed this principle and thought that it would give good results in interstitial radiation in the pelvis. Lastly, did the men Dr. Wilson had been associated with, think there was any histological effect, as the results had seemed so wonderful.

Dr. Wilson thanked his hearers for their remarks. In reply to Dr. Marks he stated that the five year period as a sign of cure was a purely arbitrary one, but it was a fact that the highest percentage of recurrences after treatment of carcinoma of the cervix occurred within three years.

In reply to Dr. Lukin's question regarding preoperative radiation, he stated that there was an optimum period for operation and it was given as six weeks. He had seen Donaldson's patients operated on after one treatment of the cervix by means of radium, and had noticed very little reaction from the radium.

In reply to Dr. McLelland, he stated that none of the techniques employed was perfect, and the staff of each radiological clinic pursued their own technique, which differed from that of the others. The important point was to use a technique that produced good results and to keep to that one. One factor which influenced the adoption of any technique, was the way in which the radium was split up and the amount of radium available. The problem in cancer of the cervix was the method of attacking the lymph glands. The cervix and the parametria were reached by modern techniques, but the glandular involvement was the factor preventing better results. In inoperable malignant disease Bonney suggested opening the abdomen and dissecting out the glandular area, applying radium for the cervix and parametria.

In reply to Dr. Sutton regarding the radio-sensitivity of tumours, he stated that a lot of work had been done on the histological and pathological side, but in practice he had found that as yet no reliance had been placed on the pathological findings apart from the compilation of accurate statistics. The morbidity in radium, apart from atrophic changes in the cervix and vagina, was generally

due to insufficient filtration. In reply to Dr. Meyers regarding the reopening of the abdomen for the removal of radium which had previously been inserted in the pelvis, he doubted whether he himself would do this. It was comparatively easy to insert the needles, but there were risks when the abdomen was reopened. He had seen one patient in whom the first incision was practically a pus sac, but the surgeon had no alternative to reopening this infected wound, as the radium had to be removed not later than a certain date. It was perhaps possible that the same effect would be secured without risk if radon seeds, properly filtered, were inserted and left there. This obviated the necessity of reopening the abdomen.

In regard to interstitial or distance radium therapy, there was a decided tendency in gynaecological circles to prefer surface application to needling the tumour.

Dr. Wilson said Forsdike had told him that there was a radium boom ten years ago, as there was at present. It was not so large as this one, as there had not been so much radium available. Radium had then been hailed as a wonderful cure for cancer, because the primary growths had disappeared so miraculously. But a few years later, when the secondary involvements made their appearance, radium had fallen into disrepute in many centres, and if care were not taken at the present time, the same thing would happen again. The psychological effect was a very important one, and patients would be much more likely to appear early for radium treatment than they would if their treatment involved a Wertheim's operation. As to the question of the "bomb" or radium "gun," great results were being expected, but sufficient experience had not been gained to foretell its part in the treatment of gynaecological cancers.

NOMINATIONS AND ELECTIONS.

THE undermentioned has been nominated for election as a member of the New South Wales Branch of the British Medical Association:

Franklin, Samuel de Vere, M.B., Ch.M., 1921 (Univ. Sydney), c.o. Dr. H. H. Crowe, 22, College Street, Sydney.

SCHOLARSHIPS AND GRANTS IN AID OF SCIENTIFIC RESEARCH.

Scholarships.

THE Council of the British Medical Association is prepared to receive applications for research scholarships as follows: An Ernest Hart Memorial Scholarship, of the value of £200 *per annum*; three research scholarships, each of the value of £150 *per annum*.

These scholarships are given to candidates whom the Science Committee of the Association recommends as qualified to undertake research in any subject (including State medicine) relating to the causation, prevention or treatment of disease.

Each scholarship is tenable for one year, commencing on October 1, 1931. A scholar may be reappointed for not more than two additional terms. A scholar is not necessarily required to devote the whole of his or her time to the work of research, but may hold a junior appointment at a university, medical school or hospital, provided the duties of such appointment do not interfere with his work as a scholar.

Grants.

The Council of the British Medical Association is also prepared to receive applications for grants for the assistance of research into the causation, treatment or prevention of disease. Preference will be given, other things being equal, to members of the medical profession and to applicants who propose as subjects of investigation problems directly related to practical medicine.

Conditions of Award: Applications.

A copy of the regulations relative to the award of the scholarships and grants for 1931, and of the prescribed application form, can be obtained on application to Dr. R. H. Todd, Secretary of the Federal Committee of the British Medical Association in Australia, British Medical Association House, 135, Macquarie Street, Sydney. The completed application form is required to be submitted to Dr. R. H. Todd not later than March 7, 1931.

Applicants are required to furnish the names of three referees who are competent to speak as to their capacity for the research contemplated, to whom reference may be made.

Post-Graduate Work.**PRIMARY FELLOWSHIP EXAMINATION.**

THE Honorary Secretary of the College of Surgeons of Australasia has received a cable from the Secretary of the Royal College of Surgeons of England, notifying him that it is hoped to arrange for the examination to be held in Melbourne in the last fortnight in August, 1931. The exact date will be announced later. The following examiners have been appointed:

Anatomy: Professor William Wright; Assessor, Professor F. Wood-Jones.

Physiology: Professor G. A. Buckmaster; Assessor, Professor W. A. Osborne.

Superintendent of the Examination: Associate-Professor H. S. Summers.

Superintendent of Dissections: W. A. Hailes, Esq., F.R.C.S., F.C.S.A.

Courses of Instruction.

New South Wales. The Post-Graduate Committee of the New South Wales Branch of the British Medical Association has arranged a course of instruction in which lectures in anatomy will be delivered by Dr. F. A. Maguire, Dr. V. M. Coppleston and Dr. I. Douglas Miller, and in Physiology by Dr. A. J. Canny. This course will begin early in April, 1931. The fee for the course will be twenty guineas. Further information regarding this course can be obtained from Dr. J. G. Hunter, Medical Secretary of the New South Wales Branch of the British Medical Association, 135, Macquarie Street, Sydney.

Victoria. The course has been arranged by the Melbourne Permanent Committee for Post-Graduate Work. The lecturer in anatomy will be Professor F. Wood-Jones, and the lecturer in physiology will be Dr. C. H. Kellaway. This course will begin early in April, 1931, and the fee for the course will be twenty guineas. Further information can be obtained from Dr. W. W. S. Johnston, Honorary Secretary of the Melbourne Permanent Committee for Post-Graduate Work, 12, Collins Street, Melbourne.

South Australia. A course is being arranged by the University of Adelaide, of which the details will be published in a later issue.

Candidates are reminded that completed entrance forms, with the necessary certificates and a fee of £25, must be sent to the Honorary Secretary of the College of Surgeons of Australasia, 6, Collins Street, Melbourne, before April 1, 1931.

Correspondence.**CLINICAL PATHOLOGISTS.**

SIR: It would appear to be necessary to revert to the elementary and define the term "clinical pathologist" for the benefit of your correspondent "Dr. Jekyll."

A clinical pathologist is one to whom a clinician may state the observed clinical facts in a given instance and who from his special knowledge of laboratory methods should be capable of suggesting and carrying out fruitful

lines of investigation. In other words, he is a consultant in a special field and one whose place is scarcely to be taken by a lay technician, as "Dr. Jekyll" contemptuously suggests.

Again to labour the obvious, the clinical pathologist is so described to distinguish him, in contact as he is with everyday problems in clinical diagnosis and prognosis, from the purely academic worker whose field of activity is teaching or research.

I am content to leave it to the judgement of your readers as to whether there is any "cant" implied by the term "clinical pathologist." I will concede that one who has adopted the study of applied pathology as his special work is a poor clinician in the sense that he loses a great deal of whatever proficiency he might have once possessed in physical examination and the appreciation of elusive physical signs, but the clinical pathologist makes no pretensions in this direction. On the other hand, all practitioners, unless they have the unfortunate outlook of "Dr. Jekyll," will agree that the intelligent cooperation of "clinician" and "clinical pathologist" is essential if empirical practice is to be reduced to a minimum.

I claim that clinical pathologists in their handling of sick patients are as sympathetic and human as any other type of medical practitioner and if "Dr. Jekyll" has found them otherwise, his experience has been singularly unfortunate.

Little imagination is required to realize that very often the responsibility for ultimate diagnosis is taken by the clinical pathologist. Rightly or wrongly he is expected to speak positively and the conscientious pathologist, when called upon to decide the malignancy or otherwise of a difficult microscopic section, the significance of his findings in the cerebro-spinal fluid, the evidence for and against pernicious anæmia *et cetera*, knows a little of the "worry, responsibility and heartaches that go with practice."

"Dr. Jekyll" states that clinical pathologists have no reputation to make with the public; I venture to suggest that reputations are more easily established with the lay public than with the critical profession from which the pathologist draws his *clientèle*.

It would not be difficult to name clinical pathologists practising as such in the capital cities of Australia who have sound scientific work to their credit embodied in published papers. Such work has been accomplished by an enthusiasm for research which has not shirked long hours of work in the hospital laboratory after the daily routine has been discharged, and earnest endeavour to which no direct monetary reward accrued. Are not such pathologists entitled to a little better standing in the profession than "Dr. Jekyll" is disposed to allow them?

As a "clinical pathologist" I take strong exception to the letter of "Dr. Jekyll" for its erroneous representation of the status of a pathologist and for its belittling and contemptuous phraseology.

Would he not have signed himself more appropriately "Mr. Hyde"?

Yours, etc.,

REGINALD WEBSTER.

12, Collins Street, Melbourne.
December 2, 1930.

SIR: The letter from your correspondent, "Dr. Jekyll," reminds me of some correspondence which took place in *The British Medical Journal* some few years ago, also in regard to the clinical pathologist. In that case the serologist was being discussed.

It was stated that the Wassermann reaction test was worse than useless, and because the correspondent had found that it was possible to send portion of the same blood to two different laboratories and to get a negative report from one and a positive report from the other. Not only that; it was even possible to send two specimens of the same blood to a laboratory and to get a negative report from one portion and a positive one from the other portion.

The correspondent was quite of the opinion that the serologists had thus been given the death blow by him.

However, in the next issue of the journal a correspondent drew the attention of the former correspondent to the fact that this experience should not be looked upon as an indication of the uselessness of the Wassermann test, but as the indication as to which pathologists should be shunned.

And that ended the correspondence.

Yours, etc.,

"ANTHUMBUG."

December 4, 1930.

SIR: If "Dr. Jekyll" was bewildered and amazed at your article on clinical pathologists, what banal verbs of exaggeration can possibly describe the feelings of your readers on perusing "Dr. Jekyll's" pedagogic asinities the following week.

Although it is calamitable in you, Mr. Editor, to discuss fees in what "Dr. J." purports to be a public newspaper, it is apparently quite decent and praiseworthy in him to continue the argument in a manner disgustingly acrimonious, clumsily offensive and deplorably vindictive. Quite obviously, diabolical inspiration is not reserved exclusively for the editorial pen. This clinical swashbuckler, "Dr. Jekyll," is, I presume, one of our typical "bottle and advice" doctors who change their prescriptions as often as necessary, their motives being, doubtless, to justify a fee. From his Olympian heights (which are really only mole hills) he regards with disdain his fellow practitioner who, trained primarily as a clinician, seeks outside clinical spheres for further information through the medium of microscope and test tube. One remembers here how the dwarf on the giant's back can see more than the giant, but one would expect that even this obnoxious clinical dwarf would at least refrain from heckling the beneficent giant of pathology.

"Dr. J." can find no place for the private pathologist. They should, says he, be employed by institutions. I would go further and suggest that these institutions should abolish the honorary doctors, especially the clinical ones, have a few paid residents to do the routine clinical ritual which tradition demands, and then let the really important chemical and pathological work be done by the experts who, as he suggests, should be well paid, for they indeed do render service.

Finally, our Stevensonian character exposes his weakness to full view when he declares that "nursing sisters the world over" testify to the *gaucherie* of pathologists in the presence of patients. In the first place, they don't so testify, and in the second, even if they do, it is surely a new departure for our little clinical demigod to heed the tittle-tattle of women, albeit very noble women. Or perhaps these ladies were countering his arrogant bluff by serving up to him a little of his own eyewash.

Yours, etc.,

"MR. HYDE."

December 8, 1930.

TRACHOMA.

SIR: In the concluding paragraph of his letter published in today's issue, Sir James Barrett, speaking of trachoma, says: "The experiences of Egypt, however, show that if it is contagious in the ordinary sense without some predisposing feature the risk of contagion is very slight..."

Sir James, if he is conversant with the history of the Chinese Labour Battalions in France—their numbers reached about 70,000 in 1918—will know that during 1917 some 1,300 of these at one time were in hospital suffering from eye troubles, mostly conjunctival inflammation, and of these I superintended over 600 pronounced trachoma in a contagious stage. The diagnosis was made by three medical officers in consultation, some of whom were teachers in eye diseases at the Pekin University, and doubtful cases were kept for inspection by Sir W. Lister and Dr. Cunningham each week.

All of these cases had been pronounced free from trouble some three weeks previously on embarkation at Tientsin, and it was held that they had become infected on the

trip through the presence of undetected non-acute cases. Some of the doctors in France had been the examining officers on embarkation. They felt certain that they passed no recent cases.

Sir James Barrett's views on these cases would be of great interest.

Yours, etc.,

ARTHUR MURPHY.

Brisbane.

December 6, 1930.

COLLES'S FRACTURE.

SIR: Mr. Fay Maclure, in his otherwise admirable "Listerian Oration," published in your issue of November 29, 1930, endeavours to perpetuate what I had hoped was an obsolete error in speaking of Colles's fracture. The method of reduction which he favours, is in the vast majority of cases unsuccessful. Reduction will seldom be obtained by adduction, using the ulnar attachments of the wrist as the fulcrum, in spite of his statement to that effect. I am constantly seeing cases of Colles's fracture, with their accompanying X rays, taken before and after one or more attempts at reduction, and repeatedly in such cases I find that the original deformity has never been reduced. In these cases the deformity has not been reduced because the practitioner has followed the advice given by Mr. Maclure and has attempted reduction by performing ulnar flexion of the wrist. It is high time that it should be universally realized that the only efficient way to reduce a Colles's fracture is by force applied directly to the lower fragment. The lower fragment should be grasped between the index finger and thumb of one hand, whilst the other hand grasps the forearm, just above the site of fracture, and in the absence of impaction it is then an easy matter to manually replace the fragments in their proper alignment. I am at a loss to understand his statement that the main frequency of bad results is recurrence of the deformity after complete reduction; on the contrary, it has long been generally recognized that a Colles's fracture, once reduced, has no tendency to recur, and with this fact in mind there are some surgeons who use no splints at all. I am certainly in agreement with him in his condemnation of the cock-up position in the treatment of the Colles's fracture. A cock-up splint will, of course, act as a definite force tending to reproduce posterior displacement of the lower fragment. However, it is hardly fair to say that redisplacement tends to occur if we apply a splint which literally forces the fractures out of alignment. Further, it is also difficult to understand why he should speak of the impacted fracture of the lower end of the radius as being different from a true Colles's, since its clinical features are identical, except that it is more difficult to reduce. He is, of course, totally wrong when he states that this fracture is not accompanied by breaking off of the ulnar styloid process; this in reality is a very common complication. Here again he is in error in the advice he gives as to reduction. Reduction is not difficult when the case is seen early; it is easy, provided the fragments are directly grasped, though it may be necessary in some cases to exaggerate the backward tilt of the lower fragment in order to undo the impaction. There is no room for doubt when the impaction has been undone, because definite crepitus can then be obtained and it is an easy matter to grasp the lower fragment and carry it back to normal position.

I am not unappreciative of the many admirable and well presented facts in Mr. Maclure's address, but I must join issue with him when he encourages adherence to the obsolete and unsatisfactory method of traction and leverage per medium of the hand in the reduction of these fractures. It should be universally recognized that only direct force applied to the lower fragment can be relied upon to restore normal alignment.

Yours, etc.,

LENIX G. TEECE.

"Locarno,"

141, Macquarie Street, Sydney.

December 8, 1930.

Obituary.

JOSEPH ESPIE DODS.

WE regret to announce the death of Dr. Joseph Espie Dods, which occurred on December 7, 1930, at Brisbane, Queensland.

CHARLES BAGE.

WE regret to announce the death of Dr. Charles Bage, which occurred on December 7, 1930, at South Yarra, Victoria.

JOHN LESLIE ROSS-SODEN.

WE regret to announce the death of Dr. John Leslie Ross-Soden, which occurred on December 7, 1930, at Middle Brighton, Victoria.

Books Received.

DIET IN DISEASE, by George A. Harrop, Junior, M.D.; 1930. Philadelphia: P. Blakiston's Son and Company. Royal 8vo., pp. 412, with eighty tables.

Medical Appointments.

Dr. F. H. Beare (B.M.A.), Dr. H. R. Pomroy (B.M.A.) and Dr. J. B. Dawson (B.M.A.) have been appointed Honorary Curators, respectively, of the Medical, Surgical and Gynaecological Sections of the Adelaide Hospital Pathological Museum.

Dr. E. E. Bottomley (B.M.A.) and Dr. A. P. Drummond have been appointed Certifying Medical Practitioners at Ashburton and Bentleigh respectively, pursuant to the provisions of the *Workers' Compensation Act*, 1928, of Victoria.

Dr. T. G. C. Retallick (B.M.A.) and Dr. W. D. Henty (B.M.A.) have been appointed Acting Medical Superintendents, Lunacy Department, Victoria.

Dr. W. A. J. Brady (B.M.A.) has been appointed Acting Superintendent, Lunacy Department, Victoria.

Dr. N. Murdoch (B.M.A.) and Dr. A. B. Hewitt (B.M.A.) have been appointed Certifying Medical Practitioners at Yarra Junction and Koo-wee-rup respectively, pursuant to the provisions of the *Workers' Compensation Act*, 1928, of Victoria.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xvi.

CHILDREN'S HOSPITAL, INCORPORATED, PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officers.
INSPECTOR-GENERAL OF HOSPITALS' DEPARTMENT, ADELAIDE, SOUTH AUSTRALIA: Honorary Vacancies.

ROCKHAMPTON HOSPITAL, ROCKHAMPTON, QUEENSLAND: Medical Superintendent.

ROYAL NORTH SHORE HOSPITAL OF SYDNEY, NEW SOUTH WALES: Honorary Assistant Urologist.

THE BRISBANE AND SOUTH COAST HOSPITALS BOARD, QUEENSLAND: Honorary Vacancies.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company, Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members desiring to accept appointment in ANY COUNTRY HOSPITAL, are advised to submit a copy of their agreement to the Council before signing, in their own interests. Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Hospital. Mount Isa Mines.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

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